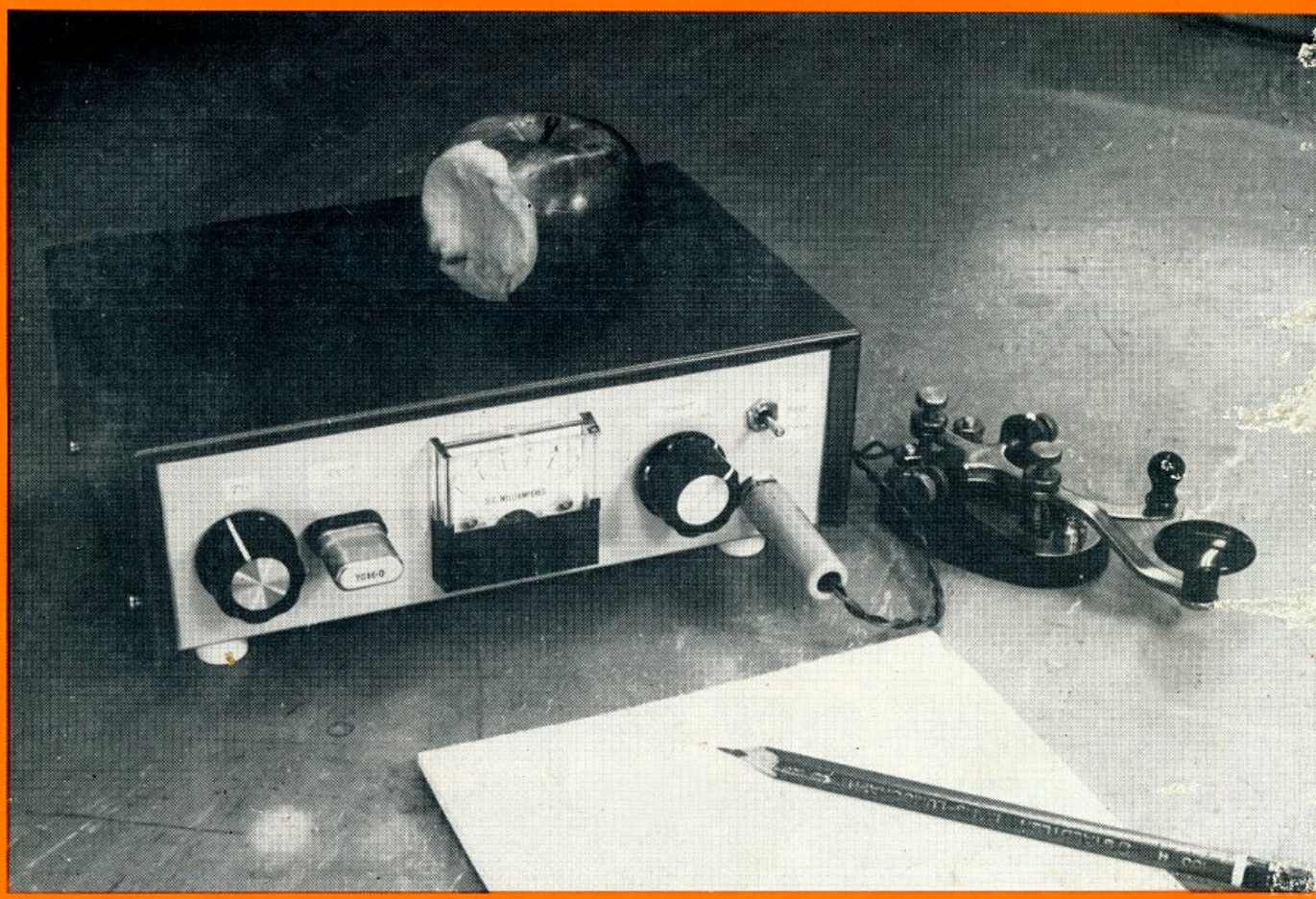
amateur radio

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



VOL. 48, No. 9 SEPTEMBER 1980

FEATURED IN THIS ISSUE:

- ★ FIVE WATT CW TRANSMITTER
- ★ PORTABLE 2m REPEATER
- ★ TAMING THE MULTIPLE ELEMENT QUAD
- ★ Review — THE ICOM IC2A 2m HAND HELD TXCVR

Registered for posting as a Publication — Category "B".

YOU'VE GOT YOUR CALL

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Published monthly as its official journal by the Wireless Institute of Australia, founded 1910.

amateur radio

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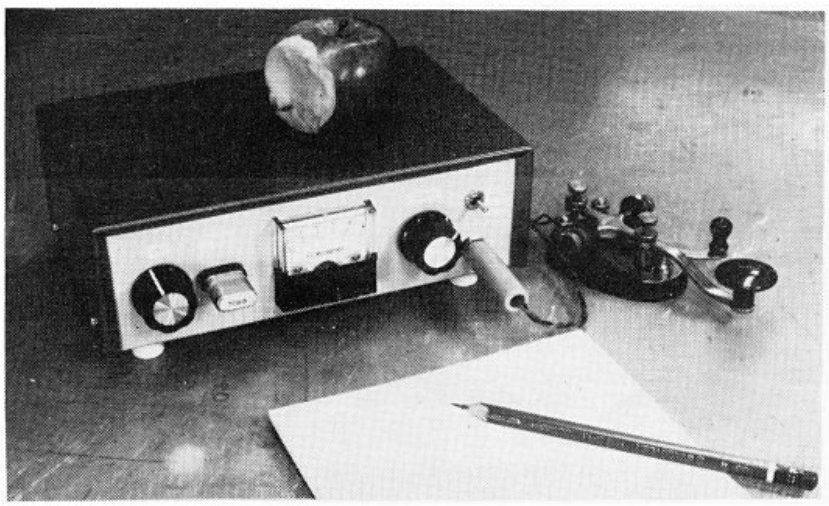

Who said homebrew is dead? If you are a Novice or Old Timer, the 5 watt CW transmitter by Drew Diamond VK3XU, pictured on our cover this month, will drive the "black box syndrome" out of you! Turn to page 8 for details.

"MORE GREAT DAIWA GEAR TO TURN YOU ON!"

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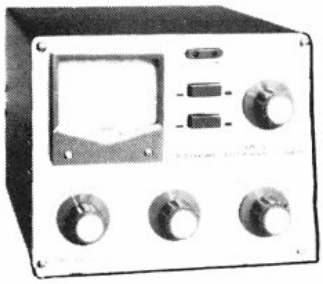

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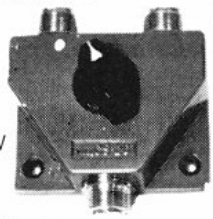
Isolation: Better than 60dB at 300MHz.



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QSP —

Why Contests ?

Basically, amateur radio is an individual hobby, pursued in one's own time, at one's own desire and covering a multitude of special interests, one of these being — contests.

An entry in a memorial contest is an expression of an amateur's respect of or admiration for the person so honoured. Three of our Australian contests are of this type — the Remembrance Day, John Moyle and the Ross Hull Contests.

Contest working allows an amateur to compete against other amateurs throughout the world on the same basis, thus allowing for individual skill and operating expertise to surpass high power and/or multi-operator stations.

Again, contest operation sharpens the senses and quickens the reflexes, particularly with regard to the phonetic alphabet thus making an excellent training ground for emergency operators.

However, in contests like the Remembrance Day Contest, where the scoring is on a Divisional basis, participation by all amateurs is essential if the purpose of the contest is to be realised, and every Division have an equal chance of winning. Participation means both the giving out of numbers and submitting of a log. So look back through the Remembrance Day results and see if your Federal and Divisional Councillors have shown by example that participation is the name of the game. Remember that leadership comes only from the top.

Contests, although not for everyone, are another facet of our wonderful hobby of amateur radio, perhaps used only by a few, but always available to all.

WALLY WATKINS VK2DEW,
Federal Contest Manager. ■

WIRELESS INSTITUTE OF AUSTRALIA

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Federal Council:
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Executive Office: 3/105 Hawthorn Rd., Caulfield North, Vic. 3161. Ph. (03) 528 5962.
Divisional Information (all broadcasts are on Sundays unless otherwise stated).

ACT:
President — Mr. A. Davis VK1DA
Secretary — Mr. F. Robertson-Mudie VK1NAV/ZZZ
Broadcasts— 3570 kHz and 2m Ch. 6 (or 7): 10.00Z.

NSW:
President — Mr. A. D. Tilley VK2BAD
Secretary — Ms. S. J. Brown VK2BSB
Broadcasts— 1825, 3595, 7146 kHz, 28.32, 52.1, 52.525, 144.1, 145.6, 146.4, Rptr. Ch. 3 — Gosford, Ch. 4 — Lismore, Ch. 5 Wollongong, Ch. 8 — Dural 11.00h local (Evening 0930Z). Relays on 160, 80 and 10m, VHF and Reptr. Ch. 3, Ch. 5, Ch. 8, and Hunter Branch, Mondays 0930Z on 3595 kHz, 10m, and Ch. 3 and 6. RTTY Sunday 0030Z 7045, 14090 kHz, Ch. 52, 0930Z 3545 kHz, Ch. 52.

VIC.:
President — Mr. A. R. Noble VK3BBM
Secretary — Mr. G. F. Atkinson VK3YFA
Broadcasts— 1840, 3600, 7135 kHz — 53.032 AM, 144.2 USB and 2m Ch. 2 (5) repeater: 10.30 local time.
Gen. Mtg. — 2nd Wed., 20.00.

QLD.:
President — Mr. A. J. Aarsse VK4QA
Secretary — Mr. W. L. Glells VK4ABG
Broadcasts— 1825, 3580, 7146, 14342, 21175, 28400, kHz; 2m (Ch. 42, 48): 09.00 EST.
Gen. Mtg. — 3rd Friday.

SA:
President — Mr. I. J. Hunt VK5QX
Secretary — Mr. W. M. Wardrop VK5AWM
Broadcasts— 1820, 3550, 7095, 14175 kHz; 21.160 28.5 and 53.1 MHz, 2m (Ch. 8): 09.00 S.A.T.
Gen. Mtg. — 4th Tuesday, 19.30.

WA:
President — Mr. B. Hedland Thomas VK6OO
Secretary — Mr. Peter Savage VK6NCP.
Broadcasts— 3560, 7075, 14100, 14175 kHz. 28.47, 53.1 MHz. 2 metres Ch. 2 Perth, Ch. 6 Wagin. Time 0130Z.
Gen. Mtg. — 3rd Tuesday.

TAS.:
President — Mr. R. Emmett VK7KK
Secretary — Mr. B. J. Morgan VK7RR
Broadcasts— 7130 (SSB) kHz with relays on 6 and 2m Ch. 2 (S), Ch. 8 (N), Ch. 3 (NW), 09.30 EST.

NT:
President — Mr. T. A. Hine VK8NTA
Vice-Pres. — Barry Burns VK8DI
Secretary — Robert Milliken VK8NRM
Broadcasts— Relay of VK5WI on 3.555 MHz and on 146.5 MHz at 2330Z. Slow morse transmission by VK8HA on 3.555 MHz at 1000Z almost every day.

Postal Information:
VK1 — P.O. Box 46, Canberra, 2600.
VK2 — 14 Atchison St., Crows Nest, 2065 (Ph. (02) 43 5795 Tues & Thurs 9.45-13.45h).
P.O. Box 123, St. Leonards, NSW 2065.
VK3 — 412 Brunswick St., Fitzroy, 3065 (Ph. (03) 41 3535 Weekdays 10.00-15.00h).
VK4 — G.P.O. Box 638, Brisbane, 4001.
VK5 — G.P.O. Box 1234, Adelaide, 5001 — **HQ at** West Thebarton Rd., Thebarton.
VK6 — G.P.O. Box N1002, Perth, 6001.
VK7 — P.O. Box 1010, Launceston, 7250.
VK8 — (incl. with VK5), Darwin AR Club, P.O. Box 37317, Winnellie, N.T., 5789.

Slow morse transmissions — most week-day evenings about 09.30Z onwards around 3550 kHz.

VK QSL BUREAUX

The following is the official list of VK QSL Bureaux, all are inwards and outwards unless otherwise stated.

VK1 — QSL Officer, G.P.O. Box 46, Canberra, A.C.T. 2600.
VK2 — QSL Bureau, C/- Hunter Branch, P.O. Teralba, N.S.W. 2284.
VK3 — Inwards QSL Bureau, Mr. E. Trebilcock, 340 Gillies Street, Thornbury, Vic. 3071.
VK3 — Outwards QSL Bureau, Mr. R. R. Prowse, 83 Brewer Road, Bentleigh, Vic. 3204.
VK4 — QSL Officer, G.P.O. Box 638, Brisbane, Qld., 4001.
VK5 — QSL Bureau, Mr. Ray Dobson VK5DI, 16 Howden Road, Fulham, S.A. 5024.
VK6 — QSL Bureau, Mr. J. Rumble VK6RU, G.P.O. Box F319, Perth, W.A. 6001.
VK7 — QSL Bureau, G.P.O. Box 371D, Hobart, Tas. 7001.
VK8 — QSL Bureau, C/- VK8HA, P.O. Box 1418, Darwin, N.T. 5794.
VK9, 0 — Federal QSL Bureau, Mr. N. R. Penfold VK6NE, 388 Huntriss Rd., Woodlands, W.A. 6018.

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Roy Lopez

ANTENNAS

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HY-GAIN

TH3-JR 10-15-20M 3 el yagi 12' boom..... $250
DB10-15A 10-15M 3 el yagi 13' boom..... $190
153-BA 15M 3 el yagi 12' boom..... $120
18-AVT/WBa 10-80M trapped vertical 21'..... $125
8 el 2M yagi 14' boom 15db gain..... $50
14 el 2M yagi 16' boom 18db gain..... $60
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OSCAR-2D 2M mobile co-linear 2 x 5/8W..... $35
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KEN KR500 vertical rotator $170
CDE HAM-1V heavy duty..... $225
CDE T2X TAIL TWISTER extra heavy duty..... $300
KEN KS-065 stay/thrust bearings..... $30
8 core rotator cable per metre..... .80c
RG-58U coax cable per metre..... .50c
RG8U foam coax cable per metre..... $1.20

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Roy Lopez (VK2BRL)

WIANEWS

CB

At the time of writing, this the Institute's submission on the matter of the CBRS Review, has taken shape and will be submitted in time. The Institute's policies are clear and have been much publicised lately.

MEETINGS

One meeting of the Executive was held in mid-July. It was noted that the attention of the P. and T. Department had been drawn to the withdrawal of the concessions previously granted to holders of "C" calls. Apart from identification, the new Handbook, paragraph 6.38, now requires "C" call station licensees to seek prior approval for a change of address. It is understood these matters will be rectified. Another item discussed was the VK0RM DX-pedition. The Federal Awards Manager was fully supported in accepting contacts made only on 17th March, 1980. A suggestion that contests be banned from all the three new bands at 10, 18 and 24 MHz was received. A suggestion that WAVCKA be made available to VK amateurs was also received.

1980 CALL BOOK

If all goes according to plan the new WIA Call Book should have been distributed by the time you read this. There were far too many duplicated call signs in the listings which could not be resolved before the lists went to press. Any assistance from members in sorting these out would be very welcome. It was bad luck that further lists from the Victorian and Queensland licensing officers arrived after going to press. The 1980 Call Book is in the nature of an "intermediate" update because hitherto the Call Book was issued only each second year (1979, 1977, etc.). This issue will contain some new material, such as a DXCC countries list in a format which avid DXers can use and frequency spectrum (existing) charts. In a year or two it is proposed to publish similar charts operative from 1st January, 1982. The 1981 Call Book is intended to include updates of the material (including club listings) in the 1979 Call Book.

GENERAL

Ken Seddon VK3ACS was elected as Executive Vice-Chairman for the ensuing year. Ken is also Chairman of the Federal Repeater Sub-Committee. A design for the international-diamond style of badge was finalised. It was agreed to ask the Department for stations such as VNG to transmit IPS predictions. ■

AFTERTHOUGHTS

MODIFICATION OF SSB 27 MHz PLL Tcvr FOR 10m OPERATION — by G. T. Ryan VK4AR (Aug. 1980, p.11).

It has been pointed out by Mr. B. Kelleher VK3AIK that not all PLL ICs referred to are identical. He writes:

In addition to the sets mentioned in the article the PLL02A PLL is also used in the Electrophone and HMV sets.

Unfortunately I have found that not all PLL02As have pin 4 connected as shown, allowing a reference divider ratio of either 1024 (10 kHz) or 2048 (5 kHz).

All PLL marked "PLL02AG" have the dual facility, but those with "PLL02A and either M60, M69 or MGN" do not.

The "G" version has been in two-thirds of the sets that I have seen. ■

STOP PRESS

Third Party Traffic

The Minister for Posts and Telecommunications, Mr. Tony Staley, in opening the 1980 Remembrance Day Contest, announced that forthwith the prohibition on third party traffic by amateurs would be removed for non-commercial messages within Australia. He also indicated that agreement would be sought with other countries, that permit their amateurs to pass third party traffic, to allow international third party privileges for Australian amateurs communicating with amateurs in these countries. Until such agreements are made, Australian amateurs are prohibited from passing any international third party message.

QSP

JOTA

A reminder about the 23rd Jamboree on the Air, October 18th-19th, starting at 00.01h local time on the Saturday and finishing at 23.59h local time on the Sunday. Stations are free to begin operations earlier if they wish. World Scout phone frequencies are 3.59, 7.09, 14.29, 21.17 and 28.59 MHz. Listen on the frequency before calling "CQ Jamboree". The opening ceremony will be at 14.00h on Saturday from VK1BP from the grounds of Government House in Canberra. The Chief Scout, Sir Zelman Cohen will give an address, followed by one for the Girl Guides by Lady Cohen, and then one each from the Chief Commissioners for Scouts and Guides. The frequencies used will be 7.09, 14.29 and 21.17 MHz, starting half an hour before the official opening ceremony, so please keep these frequencies clear. Kevin Campbell will operate his station VK0KC for JOTA from Mawson in Antarctica. The World Bureau station will use a GB call sign from Laboratories near Windsor Castle in the UK. VK1BP might continue operating as a participant if another QTH can be arranged for it after the opening ceremony. The station has to close down for security reasons before 16.30h on the Saturday. The 13th Australian Jamboree will take place at Collingwood Park in Ipswich from 29th December, 1982, to 7th January, 1983. ■

Five-Watt CW Transmitter

Drew Diamond VK3XU
43 Boyana Crescent, Croydon 3136

The transmitter to be described may be built to operate on *any* single band from 3.5 to 21 MHz, and provide field or home station operation. A suitable power supply circuit for home station operation is included. All components used are readily available here in Melbourne at present, and total cost is around $50, including one crystal.

The variable crystal oscillator allows a frequency change of about 0.15 per cent or 10 kHz at 7 MHz, so much greater mobility of frequency is obtained over that of a conventional crystal oscillator, whilst at the same time retaining good stability. An attempt to pull the crystal too low on 14 and 21 MHz will simply result in drop-out. The variable capacitor used in the VXO is a surplus unit available from several sources here.

Keying is achieved by employing a keying transistor, Q4, to control collector supply voltage to Q3 and Q5. Shaping is provided by R11, R12 and C13. Quality is good with no sign of click, chirp or droop. The popular Accukeyer may be used with this transmitter by omitting Q4 (referring to Accukeyer circuit) and using the collector of Q3 to do the keying.

Multi-band operation may be achieved by employing a two-pole, four-position wafer switch to change the low-pass filter to suit the crystal in use. An RF level control is included so that the output may be varied from zero to five watts output. Incidentally, 5W is sufficient power to drive a pair of 6146s to 150W input.

Particular attention must be paid to the fabrication of the broadband transformers T1-T4. All components are soldered directly on to the copper lands and no drilling is necessary. Circuit stability is enhanced by leaving all the copper on the reverse side of the board.

The power amplifier is a stable circuit, based on a design by J. Koeler VE5FP. Q8 must be heat sunk to the base of the instrument case housing the transmitter. A 1 cm hole must be drilled through the PCB in order to achieve this. The legs of the 2N5590 must not be stressed. It will be necessary to use a small piece of 10 gauge aluminium to interface the surface of Q8 to the instrument case. The stud nut which secures the transistor should be turned just beyond finger tightness — no more.

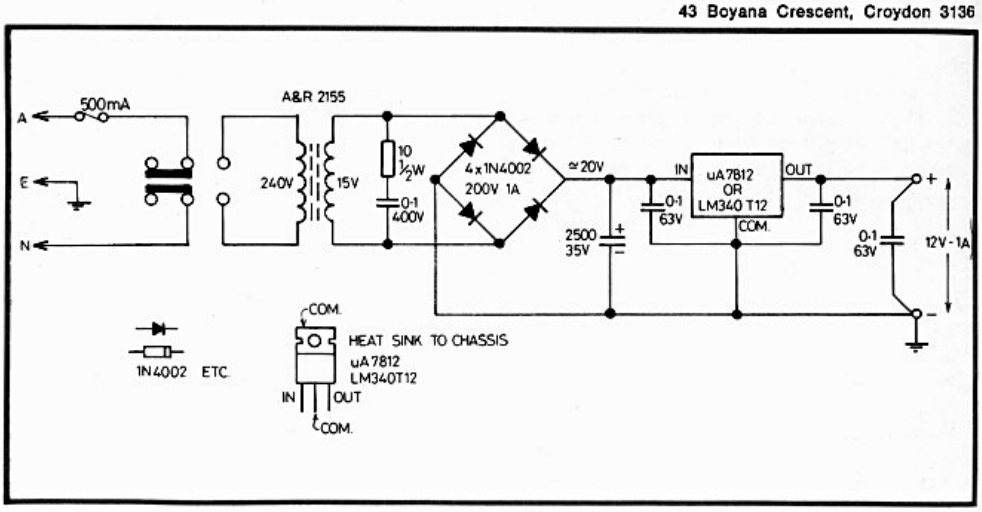


FIGURE 1: Power supply circuit diagram.

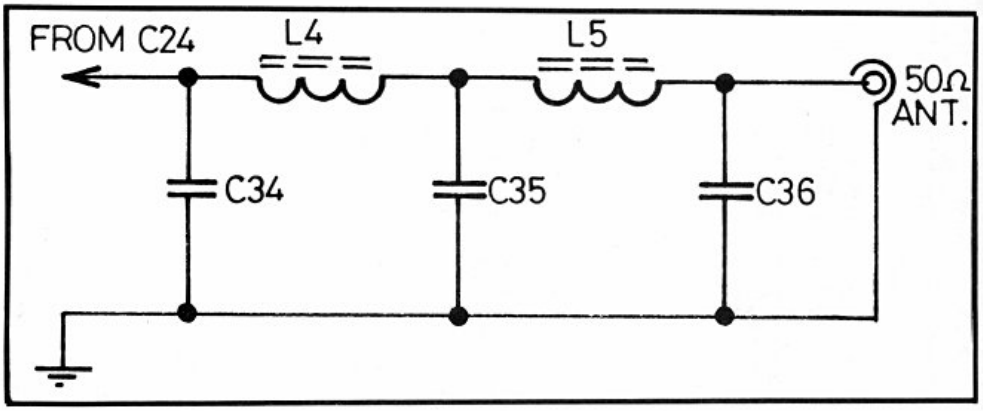


FIGURE 2: Low pass filter section (see also Table 1).

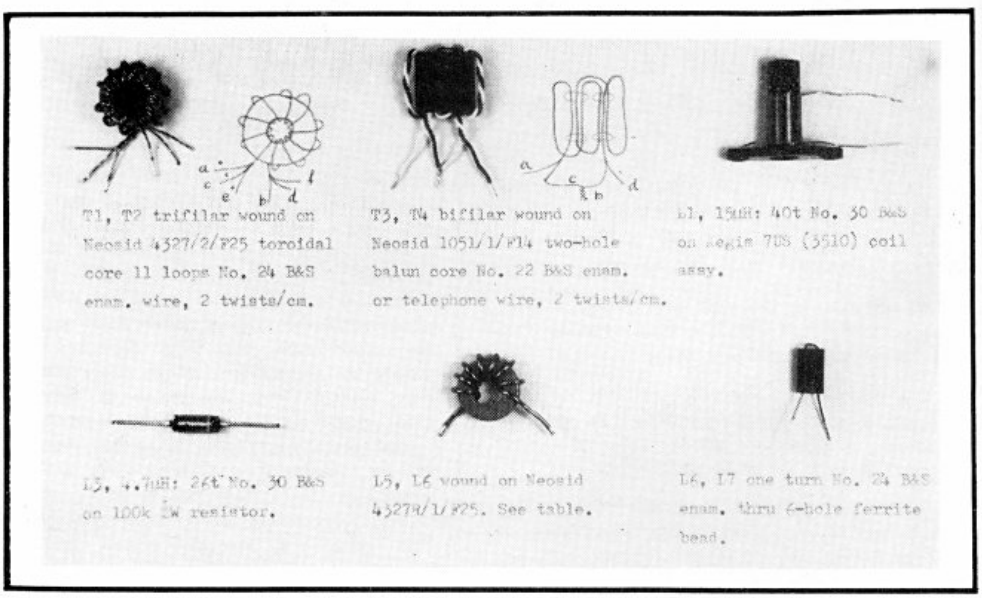


PHOTO 1: Winding details for toroids and coils.

When constructing the circuit, mount all the components except Q8. At this stage it will be possible to check the operation of the VXO and amplifiers. Q6/Q7 should provide about 400 mW RF into 50 ohms. Adjust L1 for maximum crystal pull. This will probably occur with the slug fully inserted into the coil. Check for clean keying, absence of spurii, etc. Don't worry if the waveform is not exactly sinesoidal, That's why there is a low pass filter on the output end. The circuit could be used as a 400 mW QRP transmitter at this stage by omitting Q8 and connecting the LPF at the secondary of T2. All being well, Q8 may be mounted into place and soldered. To set bias for Q8, insert a milli-ammeter in the supply line and set R28 so that Q8 draws 50-100 mA (key must be open during this set-up).

To test the completed transmitter, connect a 50 ohm dummy load to the output, close the key and rotate R10 clockwise from zero (increase level). There should be a smooth power rise indicated by M1. Any sudden changes in reading could be indicative of instability in the PA stage. Instability problems should not arise if the circuit has been closely followed. It should be possible to cure instability by changing the value of R22 (remember to reset Q8 bias) and/or removing C23. Use the station receiver to check for clicks (another indication of instability) and spurii, etc. There should be no output indication with the key open or crystal removed. Some voltages are provided on the circuit as an aid to trouble shooting should it be necessary.

When an antenna is used, it must present a 50 ohm load to the output, and SWR should generally be less than 2.0 for correct operation of the LPF. No physical damage should occur if the SWR is greater than 2.

The transmitter may be used on 1.8 MHz by using a 1.8 MHz crystal and increasing the value of the LPF constants, i.e. L4, L5 should be 4.4 uH, C34, C36; 1800 pF, and C35; 3600 pF. **Other bands,**

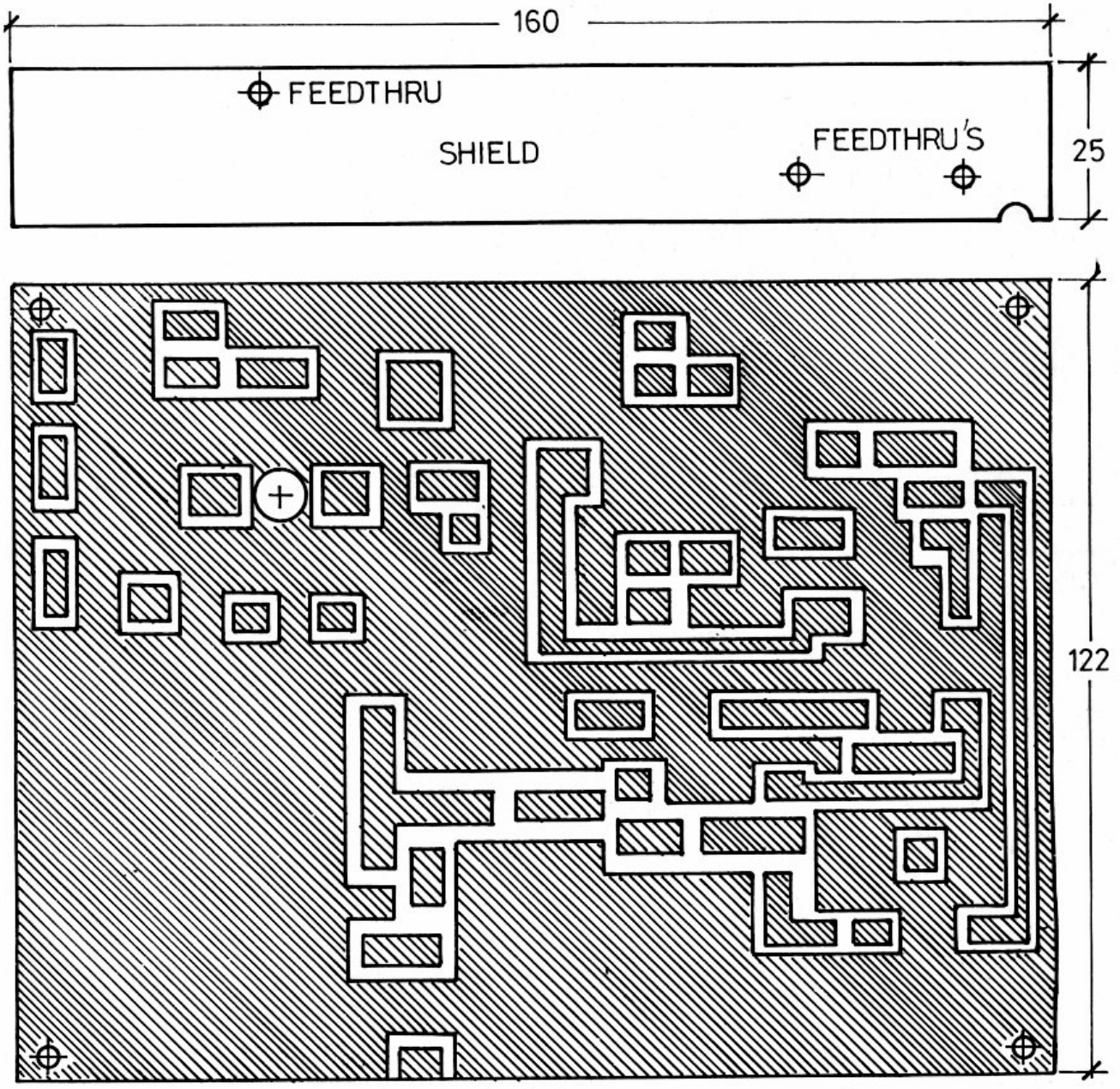


FIGURE 3: Board layout for the 5 watt CW transmitter.

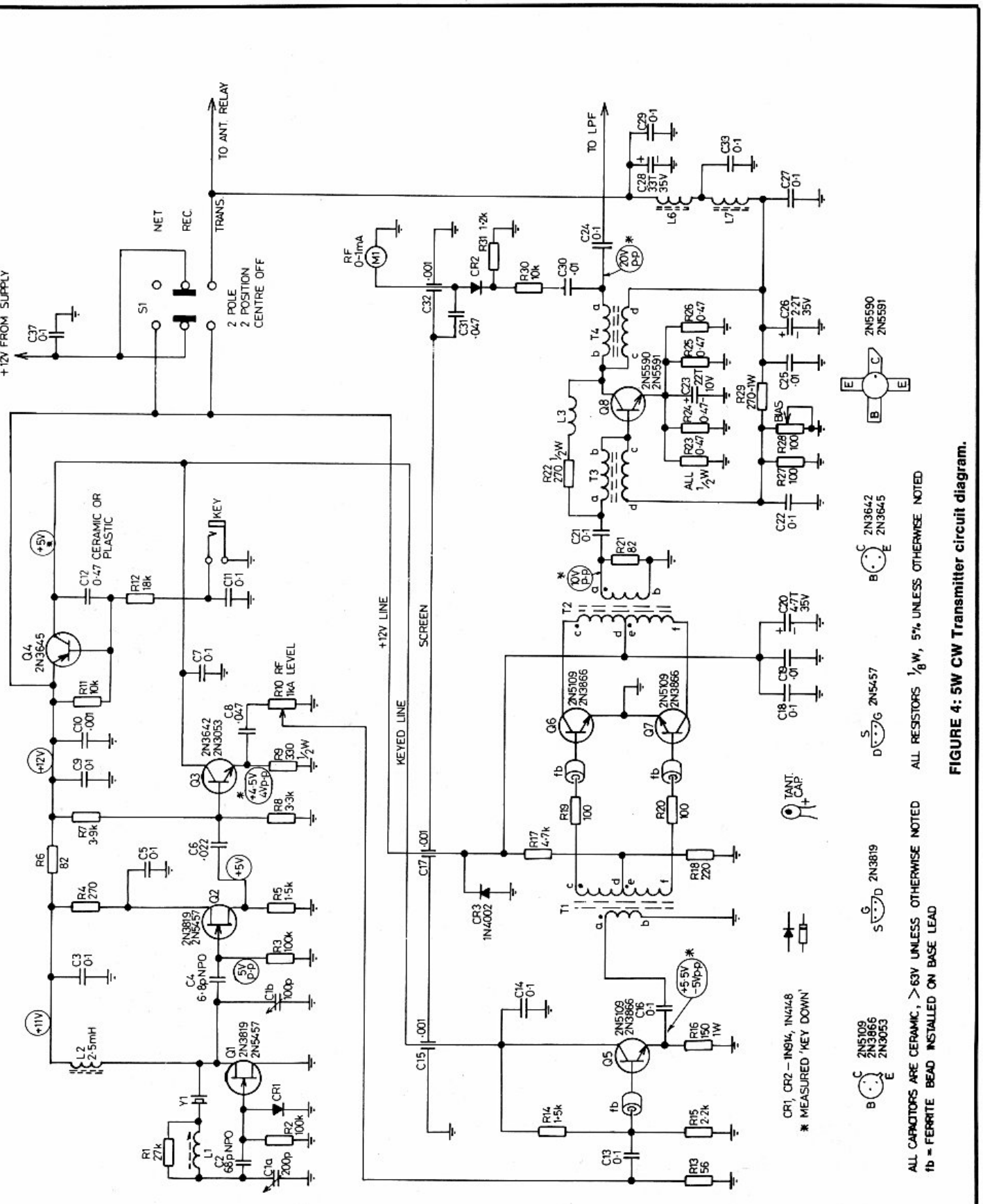


FIGURE 4: 5W CW Transmitter circuit diagram.

PHOTO 2: Component layout for the transmitter.

Band	C34, C36	C35	L4, L5
3.5 MHz	860 pF Use 470 + 390 pF	1800 pF	2.2 uH 7 turns No. 18 B & S
7.0 MHz	440 pF Use 220 + 220 pF	860 pF Use 470 + 390 pF	1.1 uH 5 turns No. 18 B & S
10.0, 14.0 MHz	220 pF	440 pF Use 220 + 220 pF	0.55 uH 3 turns No. 18 B & S
18.0, 21.0 MHz	150 pF	330 pF	0.37 uH 2 turns No. 18 B & S

All coils wound on Neosid 4327R/1/F25 torodal core.
Use Styroseal or mica capacitors, > 100V, 5%. Avoid ceramic.

- Use double sided epoxy material.
- Shaded area = copper.
- Leave copper on reverse side to form ground-plane. Components are soldered directly with no holes for components.
- Shield made from double sided material 160 mm x 25 mm with a "mouse hole" cut to allow the PCB run from Q3 to Q5.

such as the proposed 10 and 18 MHz, can be used simply by employing an appropriate crystal and using the 14 MHz LPF for the 10 MHz band and the 21 MHz filter for the 18 MHz band.

Should any constructor experience any difficulty in obtaining any of the parts used in this design, including crystals, please write and I shall obtain them for you. ■

Circuit Mods. to Kyokuto Transceiver for Handicapped Operation

Robert Wynn VK6WY
52 Clayton Street, East Fremantle 6158

This information is presented as a possible catalyst to generate ideas about equipment modification for physically handicapped amateurs. The techniques used are well known but perhaps some amateurs may be interested in the combination of ideas developed to overcome manipulative problems suffered by Don VK6DN.

The transceiver owned by Don was a Kyokuto synthesized 2m FM transceiver. I had just finished modifying my Kyokuto so that when placed in the priority mode the transceiver scanned 40 channels between 146.00 and 14.7950.

After meeting Don, I decided that the principle could well be adapted to allow him access to the main channels in Western Australia. The idea was that Don could have his Kyokuto switched to priority with modifications made so that it scanned the 40 channels slowly.

The scanner would stop at any time by Don's initiation of a very sensitive pressure switch. A similar switch would key up the Tx and allow Don to transmit.

At the finish of his over, the operation of the squelch light would enable the scan to be further inhibited.

This basic idea seemed to be quite acceptable so I went ahead and developed the following design philosophy.

The device should:—

1. Scan 50 kHz channels in the 2m band between 146-147.950 and stop on any busy channel in the listening mode.
2. Skip a busy channel and continue scanning after momentary pressure switch initiation.
3. Scan is inhibited in the Tx mode with a 3 second delay after transmission, allowing a reasonable pause between Tx and squelch operation.

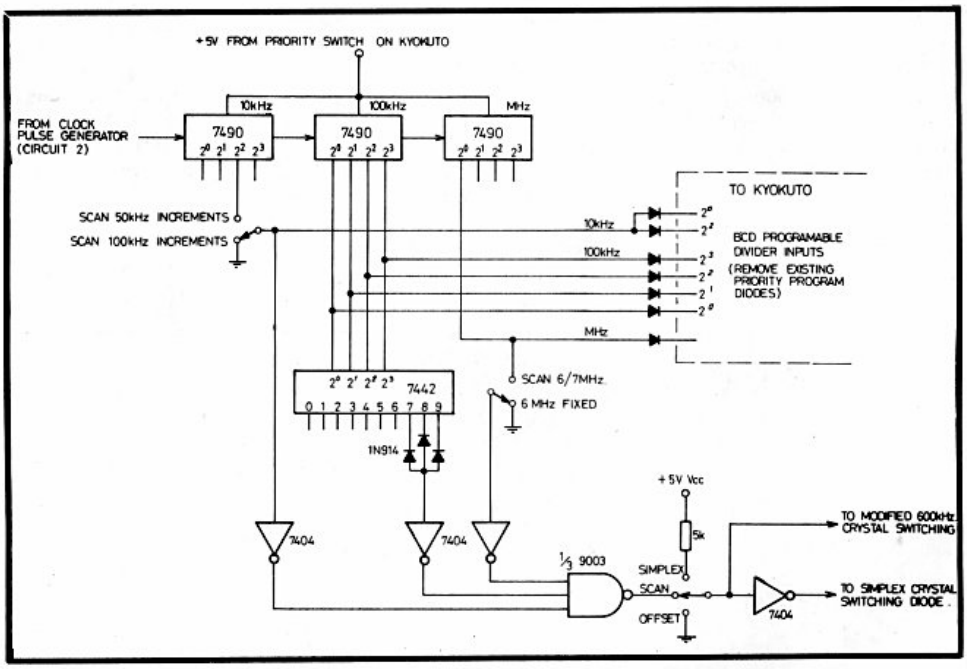


FIG. 1: BCD Counters and Auto Repeater Offset.

4. Tx can be keyed up with a momentary pressure on a 150 gm pressure switch, i.e. push on, push off.
5. Repeater offset should be automatically selected on the Western Australia repeater channels.
6. Tx should have a time out facility so that nurses and visitors could not accidentally key up the Tx permanently when Don was not aware. A 5 minute time out seemed appropriate.
7. A Tx LED displayed on microphone.

8. The rig should be capable of operating normally so that a fixed channel can be selected, monitored and worked.

Bearing the above concepts in mind, I built the logic on a piece of Veroboard and mounted it on the Kyokuto. At this point I would like to confess that the project evolved at the bench rather than by design, resulting in somewhat unconventional and inefficient use of the TTL logic. However, it does work and is reliable, which is my pragmatic approach to these things!

One of the main problems was to debounce the pressure switch, which was nothing more than a ball bearing in a tube which momentarily made a couple of contacts. I tried several circuits but most were designed for SPDT switches. The others were too erratic.

I would like to thank Bruce VK6VE who finally came up with a debounce circuit that worked.

THE CIRCUIT

Three 7490s are connected as a divide-by-1000 counter driven from a 7400 clock oscillator. The B C D outputs from the 7490s are used to programme the Kyokuto programmable dividers via 1N914 isolating diodes. A 7442 was used to give a decimal output permitting, on several pre-programmed repeater frequencies, a change to repeater offset. The common repeater frequencies in use at this time in Western Australia are 146.70, 146.80 and 146.90. However, any frequency could be programmed to operate the 9003 nand gate which diode switched the appropriate offset crystal in the Kyokuto.

The Kyokuto 600 kHz had to be modified to the same system as the simplex crystal selection. That is, +5V selects crystal. The 7400 clock oscillator is inhibited by a Schmitt trigger which is connected to provide squelch inhibit and Tx inhibit inputs. The circuit can be disabled by a pressure switch to allow the clock pulse generator to move off a channel.

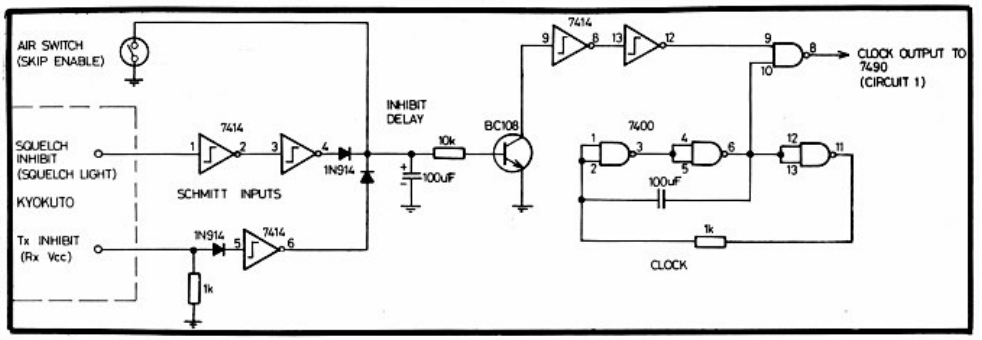


FIG. 2: Scan Inhibit and Over-Ride Air Switch Clock Pulse Gen.

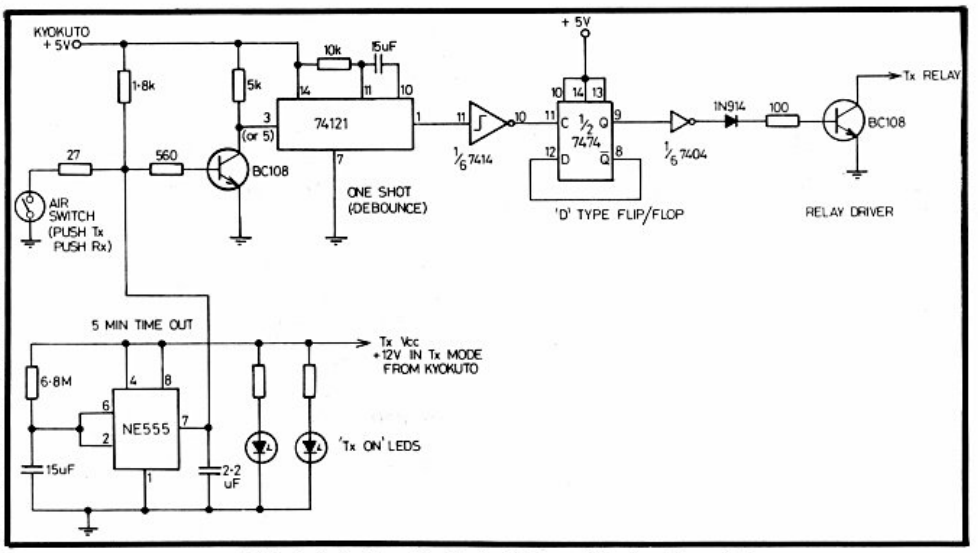


FIG. 3: Latching Tx-Rx Switch and 5 min. Time-Out.

The Tx/Rx pressure switch is debounced with a 74121 one-shot which drives half a 7474 D-type flip-flop. This flip-flop drives a BC108 which pulls in the Tx/Rx relay in the transceiver.

A timer was used with a 5 minute time constant to revert to receive if transmission persisted this long.

In practice it was found that Don was only interested in scanning between 146.00 and 147.00 in 100 kHz increments. This gave much more time to co-ordinate Tx initiation with the visual display of the Kyokuto, and is shown in the diagram as an alternative switch arrangement. I hope this information may be of interest to someone. ■

We are not Pirates

During the 1979 RD Contest, many non-VK4 operators, unused to hearing VK4WI Club call signs on air, queried the use of these call signs as legitimate Australian amateur call signs; in fact, several club station operators were asked if they were pirates!

The matter was raised at the 1980 WIAQ Club Workshop held in April, and a request was made that the Radio Amateurs' Group, VK4WIZ, clarify the situation by writing an article for AR.

Hence it would be appreciated if all Australian radio amateurs would take note that, in Queensland, the call signs **VK4WIC-WIZ** are reserved for the call signs of clubs affiliated with the WIA Queensland Division, e.g. VK4WIG is the call sign of "The Gold Coast Amateur Radio Society", etc.

Consult the Australian Amateur Call Book for further examples of clubs affiliated with the WIAQ.

To further clarify (or confuse) the situation, the club call signs are used for WICEN purposes, but only when the club concerned is involved in a certified WICEN exercise.

David Jones. ■

Have you checked your Call-Sign on the Address Label?

MORSE EXAMS

Candidates for morse exams are specially reminded that the morse sending or receiving of letters is not adequate in itself. There is a space of 7 dots between words and this has to be observed so that whatever is sent or written down should be in understandable composition English. Thus, to omit a space between two words is one error. Many errors could be recorded against you if, for example, in receiving morse, you write down a string of letters not separated into discrete words. This reminder is given to dispel any rumours to the contrary and to alert candidates to the official requirements. ■

Taming the Multiple Element Quad

A. W. (Tony) DePrato WA4JQS
205 Cherokee Trail, Somerset, Kentucky 42501, USA

It has been a long time since I have written an article for any amateur magazine, but after many "on the air" inquiries as to how my antenna performs and how I overcame various problems which seem to plague so many hams with multi-element quads, I decided to write this construction article.

For years I had used a four element monobander. After the loss of two towers I decided to try the Quad Antenna. My first try was with a two element on an eight foot boom but it did not compare with my four element beam. Next, I used a four element quad on a 20 foot boom. However, my beam worked better. I was plagued with low front-to-back and high SWR and interaction between bands. So out came the books. After many hours of research the results were a quad with high forward gain, high front-to-back ratio, no interaction, and low SWR with a wide band width.

The following specifications as to gain are approximate but can be considered accurate by amateur standards:

Four element tri-band quad.

Boom length — 30 feet.

Boom material 2 in. OD, ¼ in. wall, 6061T6 alloy.

Element spacing — 10 feet equal.

Gain — 13 dB.

Front-to-back ratio — 30 dB.

Wire size — 14g enamelled copper.

Five per cent difference factor between elements.

Design frequencies: 14.250, 21.300, 28.600 MHz.

Directors 1 and 2: Directors 1 and 2 are the same size. I used the formula 975/f MHz. The frequency and wire lengths are listed as follows: 14.250 — 68 ft. 4 in.; 21.300 — 45 ft. 8 in.; 28.600 — 34 ft. 1 in.

Driven Element: For the driven element I used 1005/f MHz. The frequency and wire length are listed as follows: 14.250 — 70 ft. 5 in.; 21.300 — 47 ft. 2 in.; 28.600 — 35 ft. 1 in.

Reflector: Here I used 1030/f MHz to obtain the wire lengths: 14.250 — 72 ft. 3 in.; 21.300 — 48 ft. 4 in.; 28.600 — 36 ft. 0 in.

Spreaders: I used one piece fibreglass spreaders 13 feet long and fitted eyebolts through the arms to run the wire through. This lets the arms move in the wind and not break the wire and also lets the wire draw and sag with temperature changes and not bow the arms. A note of interest: bamboo can be used but should be wrapped with two inch wide duct tape and then sprayed with Krylon or varnish. (Duct tape is heavy duty adhesive tape used for sealing air-conditioner ducts.—Tech. Ed.)

Radius (A) to the screw eyes is found by taking the wire length in feet for each band and multiplying by $\sqrt{2}/8$ (= 0.1768).

Example: Drill point for driven element 20 metre wire. At 14.25 MHz, wire length = 70 ft. 5 in. = 10.42 ft.

$$70.42 \times 0.1768 = 12.45$$

so A = 12.45 ft.

or 12 ft. 5 in. from centre.

Below are the drill point radii for each element:

Directors 1 and 2: 14.250 — 12 ft. 1 in.; 21.300 — 8 ft. 1 in.; 28.600 — 6 ft. 0 in.

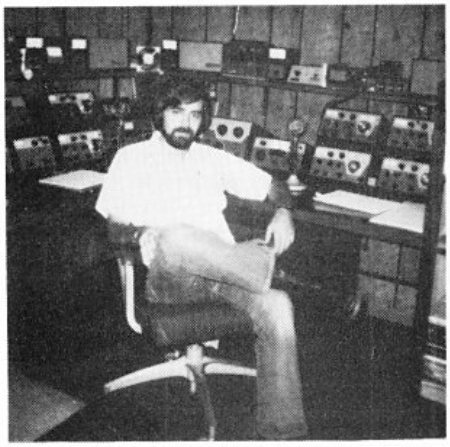
Driven Element: 14.250 — 12 ft. 5 in.; 21.300 — 8 ft. 3 in.; 28.600 — 6 ft. 2 in.

Reflectors: 14.250 — 12 ft. 8 in.; 21.300 — 8 ft. 6 in.; 28.600 — 6 ft. 5 in.

These figures are used if you measure from the centre of the boom out. To measure from butt of arms, subtract 1⅜ in. from each figure. This way the arms may be drilled before attachment to the boom. Each hole should be wrapped with duct tape after drilling, then a small nail can be used to punch a hole in the tape. Each spreader should be sprayed with Krylon or other type of coating to increase life and prevent eyebolts from rusting. I also wrapped the butt ends with duct tape for added strength.

STRUCTURAL DETAILS

The spreaders are attached to the boom by means of commercially available aluminium castings called spider mounts. Mine were made by Kirk Electronics of Chester, Conn., and obtained from Skylane Products of 406 Bon Air Drive, Temple Terrace, Fla. 33617. These mounts are in two halves which are clamped to the boom by bolts on each side.



The author in his well-equipped shack.

Note: Kirk Electronics is a division of Viking Instrument Inc., who are represented in Australia by GFS Electronic Imports, a regular AR advertiser. The quad hubs advertised by J. Vaile are the angled type for 2-element "boomless" cubical quads and would probably not be suitable for the 4-element structure. See also an advertisement by Ashpoint Pty. Ltd. in AR September 1978, page 14; much the same comments apply.—Tech. Ed.)

The mast above the Ham-M rotator is 2 inch diameter like the boom. The boom is attached to it by a 6 inch square aluminium plate and four 2½ inch U-bolts. The tower is free-standing and cranks-up to 70 feet. Nested height is 32 feet from ground to quad boom, and in this state the antenna has survived a 90 m.p.h. wind without damage.

One problem is how to string the spreaders. I drove a 2 in. 4 ft. pipe into the ground and attached the arm supports to this pipe. I then drove 2 wooden

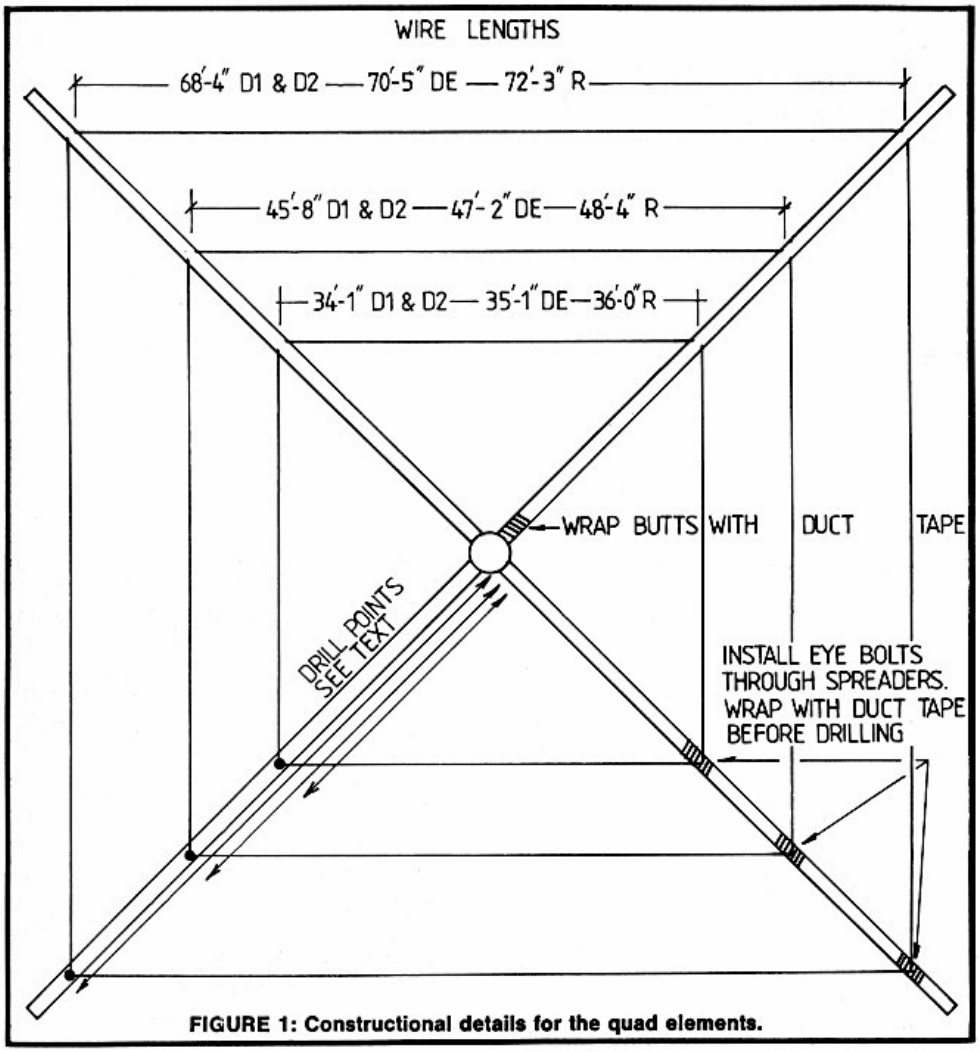


FIGURE 1: Constructional details for the quad elements.

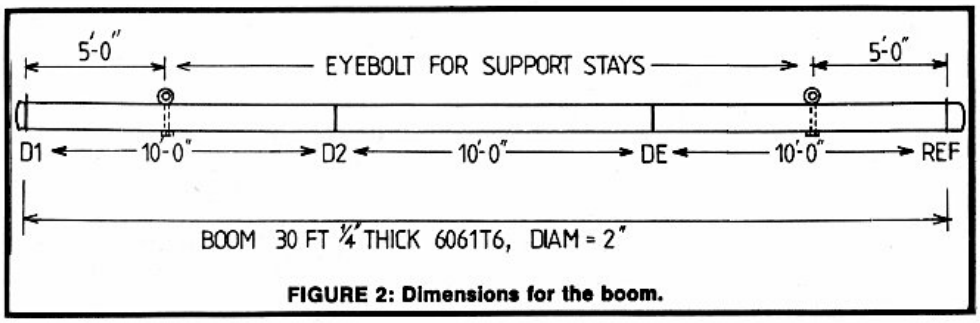


FIGURE 2: Dimensions for the boom.

3 ft. stakes into the ground to support each arm. By using this type of jig each element can be wired, removed, and then placed on the boom. I covered all nuts with General Electric clear silicone rubber then sprayed with Krylon.

Feeding the Quad: I decided to use quarter wave stubs after burning up a 1 kW ring transformer and it's no fun waiting two weeks for a new transformer. This occurred at 700 watts key-down. I used 72 ohm coax but 1 kW twin lead can also be used. Below are the lists of lengths for both coax and twin lead using the formula L = 246 VF/f MHz (VF = velocity factor).

Stubs: RG-11A/U coax Z = 72 ohm, VF = 0.66.

Driven Element: 14.250 — 11 ft. 4 in.; 21.300 — 7 ft. 6 in.; 28.600 — 5 ft. 6 in. 1 kW twin leads Z = 72 ohm, VF = 0.71. 14.250 — 12 ft. 3 in.; 21.300 — 8 ft. 2 in.; 28.600 — 6 ft. 1 in.

The stubs were cut as close to lengths as possible with PL 259 and barrel connector on one end and attached to 52 ohm coax to shack. I then checked each 52 ohm feedline using my noise bridge and R4C to confirm the SWR was acceptable.

CONCLUSION

After the antenna was installed, measurements were made. The SWR was 1.6 : 1 at its highest point on any band with very flat response across each band. I can operate either the CW or phone portion with the SWR never going above 1.6 : 1. I have been using the antenna for five months and have yet not to make it through the pile ups. The work involved is well worth the time with the results obtained. My next antenna is a two element 40 metre Quad. Should anyone want more information they could write or look for me around 14250 or on P29JS net about 0110Z Sundays.

I would like to thank Barry WA4POH. Without his help and encouragement this project would have been scrapped. Barry also put up a quad like mine and is very pleased.

REFERENCES

Radio Handbook, 20th Edition — Orr.

■

QSP

RNARS

A note from VK2ALG (QTHR) the VK Branch Manager of the Royal Naval Amateur Radio Society, advises that GB2RN will be on air all bands, CW and SSB, aboard HMS Belfast, museum preserved in London's Upper Pool (opposite the Tower) from 00.01Z on 4th April to 18.00Z on 13th April; QSL only on receipt of card plus IRC (2 IRC for airmail) via RSGB QSL Bureau. From 1st April the price of RNARS Mercury Award is increased to 50 p or 6 IRC. The Australian Branch of RNARS now has over 100 members and has taken over the wireless office of the museum ship HMAS Castlemain, at Gem Pier in Williamstown, for restoration and a permanent exhibition station VK3BZU. This work is headed by VK3BKK, QTHR.

PENPALS

Are you good at writing as well as talking? Then why not put pen to paper and write to Hidemasa Imakura JG3PLZ. Hide is a fourteen-year-old student who wishes to correspond to VK amateurs. His main hobbies are radio, books, collecting stamps and coins. Are you interested? Write to Hide at 81, Shinbori 2-Chome Sakai-shi Osaka, 591 Japan.

MOI

To coin an abbreviation — microwave oven interference. Pat Hawker in TT Radio Communications February 1980 draws attention to the concern felt about the rapidly increasing number of crude high-power transmitters that are going into homes in the form of microwave ovens. These devices are already seriously interfering with the observation of weak, extra-terrestrial signals by radio astronomers, says Sir Bernard Lovell of Jodrell Bank. Detailed investigations showed that concern is felt not only for the spectrum from 1 to 6 GHz but even wider. Ovens operate on the ISM frequency of 2.45 GHz ± 0.05 GHz generally using magnetrons capable of producing 1 to 2 kW of microwave power, operating from rectified but unsmoothed AC mains. Power is generated for about half of each supply cycle, and the magnetron usually drives a load that is deliberately disturbed by a rotating metal paddle "with the consequence that both the instantaneous frequency and the power are a function of time". Modulation sidebands thus give rise to out-of-band emissions and there is a high harmonic content. G3VA concludes his article "The prospect of millions more high-power, self-excited RAC transmitters radiating over an extremely wide band of frequencies and made unstable by revolving paddles is not one to be dismissed lightly". ■

REVIEW

The ICOM IC2A 2m Hand Held Transceiver

Ron Fisher VK3OM

PHOTO 1

As the advertisements put it, 'When is ICOM coming out with a "Handie-Talkie". Well, they have. And of course, now everyone is going to ask: just how good is the new IC-2A and what does it offer?

There is no doubt that the ICOM name is synonymous with VHF gear of excellent design, reliability and certainly popularity. It might surprise newcomers to the hobby that this reputation has been built up over only about eight years. The first ICOM or, as they were known then, INOUE IC-20 two metre FM transceivers were marketed by the Industrial and Medical Electronic Co. of Melbourne about the middle of 1971. With two channels installed they cost $295. Those of us who consider amateur gear expensive should make a few comparative calculations. However, the first INOUE gear that came into Australia was in fact an all band HF transceiver imported by Syd Clark VK3ASC, a couple of years before the IC-2D.

ICOM have come a long way in a very short time. So on this basis, just what should we expect in a two metre handie should we expect in a two metre hand talkie from ICOM? I must admit that on my first encounter with the IC-2A I was a little disappointed. After all, it didn't even have one memory, let alone scanning or other features that seem to be essential to the ardent FM operator. However after a short time operating the little rig my opinion changed.

Let's look at the IC-2A in some detail. The size is impressively small. It will fit easily into a shirt pocket and is certainly the smallest two metre hand held on the local market. The overall dimensions are 65 mm wide, 35 mm deep and 16.5 mm high and weight 470 grams. The height and weight can vary depending on the battery pack chosen, and this in turn affects the transmitter output and battery life. Our review is based on the smaller battery pack and so transmit performance figures given later are in accordance with this.

The IC-2A is simplified in both concept and to some extent in operation. Perhaps simplified concept is not quite the right way to describe a full coverage 800 channel two metre transceiver, but ICOM have chosen to offer a transceiver without electronic frequency display, memory or scanning. Perhaps it's a sign of the times that we can describe such a transceiver as basic. Frequency selection is also simplified and uses thumb wheel switches to select the 10, 100 and 1000 kHz segments with a small slide switch for five kHz up. Repeater operation is provided with either a + or —600 kHz transmit facility but no instant selection of reverse repeater mode is available. Transmit-receive change-over is accomplished by solid state switching so the PTT handle on the side only has to operate a small microswitch. There are two immediate advantages. One, the effort on the part of the operator is small and not tiring over a long period, and two, an external PTT microphone can be plugged in and used in, for example, mobile operation. The antenna supplied with the set is the usual flexible helical connected to the set via convenient BNC socket. Transmitter output is rated at 1.5 watts on high and 0.15 watt on low. Our IC-2A output was a commendable 2 watts and it should be noted that in the near future when the larger optional battery pack is available the output should be around the 5 watt mark.

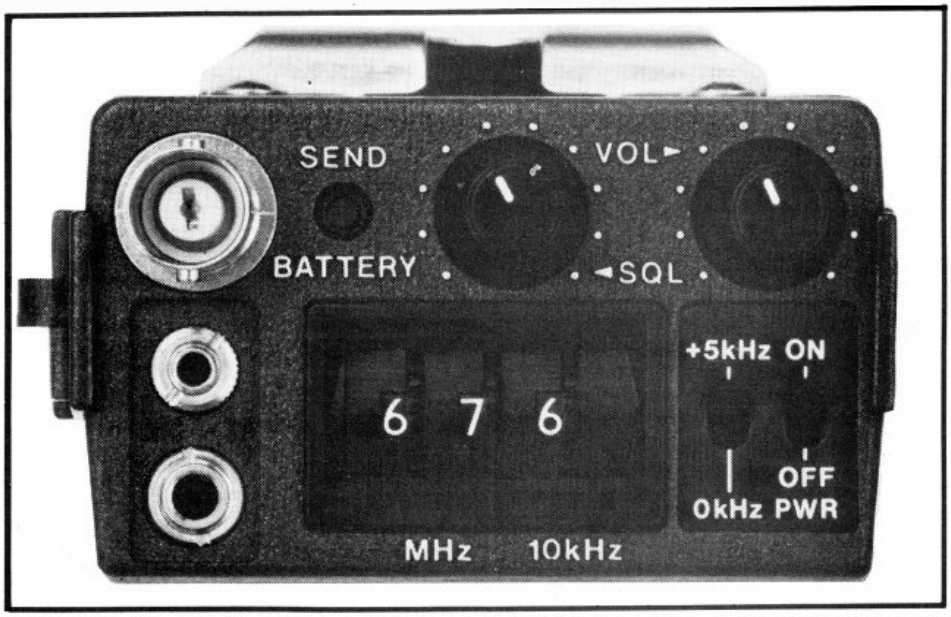


PHOTO 2: The simple control functions on the IC-2A are illustrated in this view of the control panel.

The battery pack itself is worth a note. It can be detached from the bottom of the transceiver simply by sliding it to the side. The charger connection socket is actually part of the pack. ICOM recommend that the battery should be charged when detached from the transceiver. However, we took a chance and found that the IC-2A worked very well while the battery pack was in place and actually under charge.

One common question asked by interested amateurs after looking at the IC-2A advertisement is where is the repeater offset switching? Simple — on the back of the cabinet.

Advertisements claim "ICOM Level Receiver Performance". Presumably this infers that the IC-2A receiver is as good as, say, the IC-22S. In some aspect I don't believe this to be so — but more on this later.

THE IC-2A CIRCUIT

With a total of 43 transistors, 3 FET, 5 ICs and 21 diodes, it's amazing just what can be fitted into a small box these days. The heart of the device is the PLL unit that supplies 72 to 73.9975 MHz to the transmitter multiplier stage and 66.6525 to 68.65 MHz to the receiver first mixer. Four crystals are diode switched to produce either simplex, +600 kHz, —600 kHz, or the plus 5 kHz modes of operation. The thumb wheel switches operate a programmable divider in the PLL chain to actually select the channels. The VCO is modulated to produce an actual FM (not phase) signal).

The receiver circuit is a model of simplicity. Two bipolar transistors in cascode provide RF amplification to FET first mixer. The first IF is at 10.695 MHz and employs a crystal filter and two stages of gain. Now we come to the interesting part. A single IC incorporates the second mixer, its associated crystal oscillator, the 455 kHz IF amplifier, the FM detector and the noise amplifier for the squelch circuit. Some IC. Four more transistors are used in the squelch circuit and a single IC for the receiver audio.

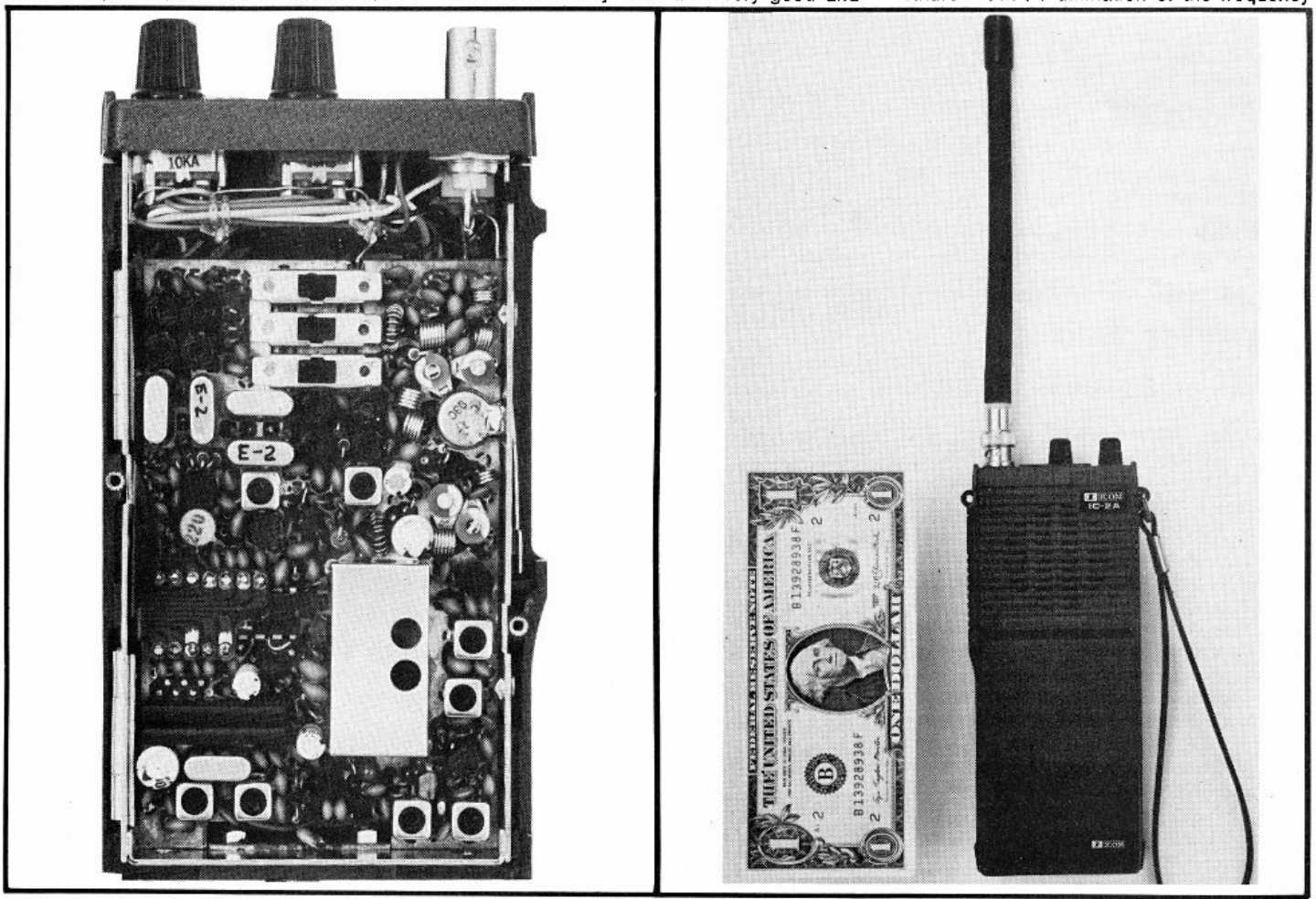
THE IC-2A ON THE AIR

First comment is on the thumb wheel frequency selection. I think these should be named fingernail switches. They are definitely easier to operate with the index fingernail, and you then have a chance of seeing the numbers. If you plan to operate after dark, take a torch — there is no provision for illumination of the readout. Selection of a given frequency is quite easy, but it is not so easy to tune across the band to hear what is happening. Receiver sensitivity was rated very good and quite comparable with other modern FM transceivers. However as noted earlier the receiver performance was not "ICOM Level". Rejection of noise such as auto ignition hash and general household appliance hash was poor. I suspect there is only a very small amount of limiting provided in the multi-function IC described earlier. In general strong signals are not affected, but weak to moderate signal level can be affected to varying degrees depending on the level of the interfering noise.

Transmit audio quality is clean and the response balanced but the distance from the microphone is fairly critical. On the IC-2A we had for review the best quality occurred at about 8 or 9 cm (3 inches) from the microphone with my particular voice. Receive audio quality was clean but output power was limited under mobile conditions. An extension speaker with higher efficiency than the very small inbuilt unit appeared to help somewhat.

The flexi antenna supplied worked about as well as expected for this type — just so so, but at times one can be surprised just what can be done with hand-helds and simple antennas.

After using the IC-2A over a number of days, only two things came to mind which might be desirable to incorporate in a future model. Illumination of the frequency



Although the IC-2A is small, the unit is crammed with components as PHOTO 3 (left) shows. The size of the unit is best described in PHOTO 4 (right) where the unit's size is compared to an American dollar bill.

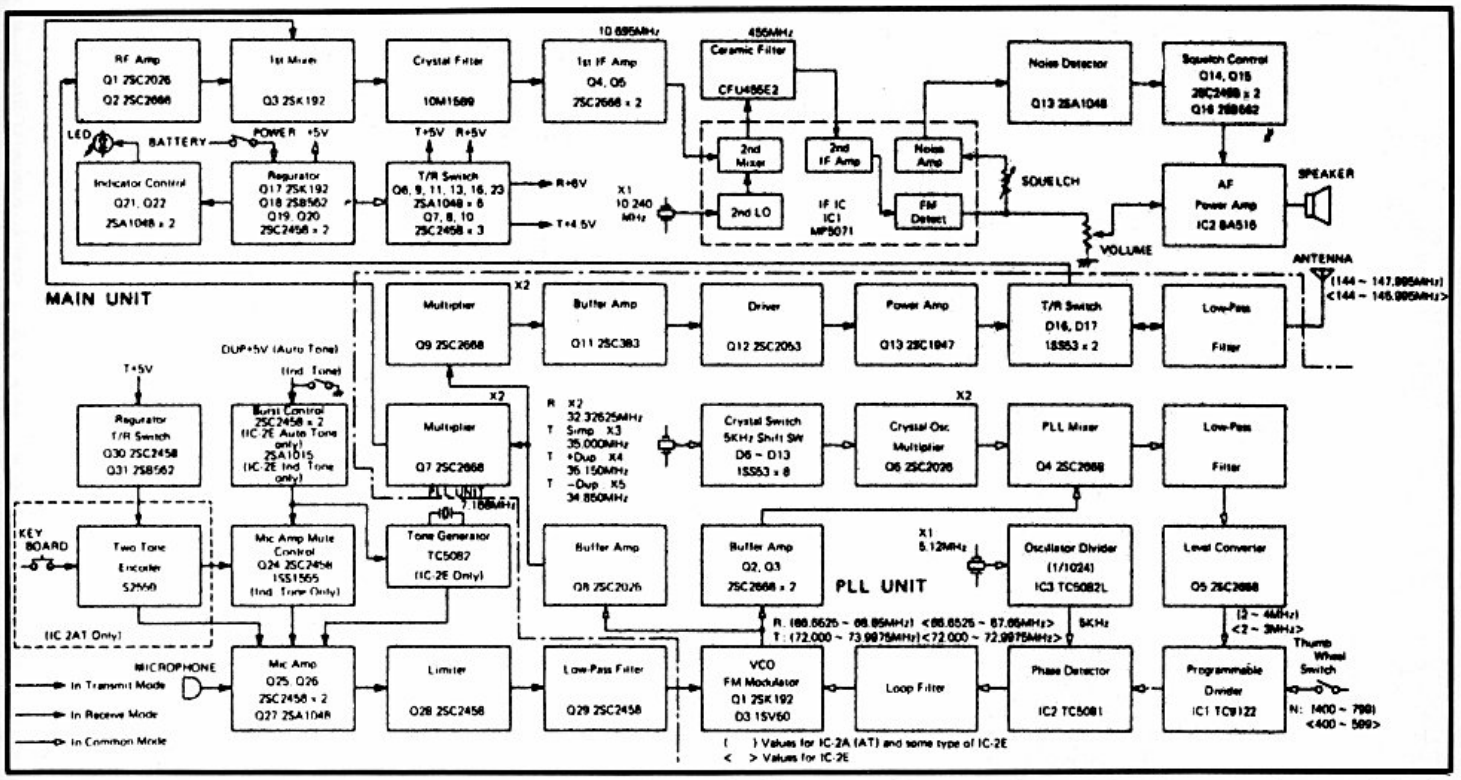


FIG. 1: Block diagram of the IC-2A.

readout, say with a push button switch and the ability to listen on the repeater input frequency. It seems that we are doomed to accept the now universal lack of meters on hand-held transceivers. A pity in many ways. A signal strength indicator was always useful to find the best transmit location into a repeater.

INSTRUCTION BOOK AND ACCESSORIES

Accessories supplied with the IC-2A include the slide on nicad battery pack, a charger for same, which plugs directly into the AC power point and connects to the battery pack via a flexible lead. There is a flexible antenna, a belt clip and a hand strap, plus a couple of miniature plugs for microphone and earphone connection. We believe that a leather case and an external microphone speaker unit will be available shortly.

The instruction covers all the required information in a clear and concise way. A trouble shooting chart included covers only operational errors and not technical problems, but a comprehensive voltage chart included would be of help to those game enough to attempt their own service. An internal photo clearly points out the various adjustment locations. The circuit diagram supplied is fairly large and easy to read.

Our test unit was kindly supplied by VICOM of 68 Eastern Road, South Melbourne 3205, and all enquiries regarding price and delivery would be welcomed. ■

Repeater Quiz

1. The proper way to enter into a QSO on a repeater is to:
   (a) say "breaker six".
   (b) just say "break".
   (c) insert your call during a pause.
   (d) just talk over the other guy; you're at a base station anyway.

2. The main purpose of a repeater is:
   (a) to keep technical types on their toes.
   (b) to enhance the range of mobile stations.
   (c) to provide a soap box for long, one-sided monologues.
   (d) to allow non-amateur housewives to keep track of their wandering husbands, or anyone else for that matter.

3. One of the most important uses of a repeater is to:
   (a) provide good mobile-to-mobile communications when driving adjacent to each other on the expressway.
   (b) enhance the range of base stations located less than three blocks from each other.
   (c) extend the range of mobile and low power portable stations.
   (d) none of the above.

4. You should sign your call letters:
   (a) any time the spirit moves you.
   (b) after every other word.
   (c) at the beginning and end of each transmission.
   (d) once coming on and once leaving the frequency, and once every ten minutes.

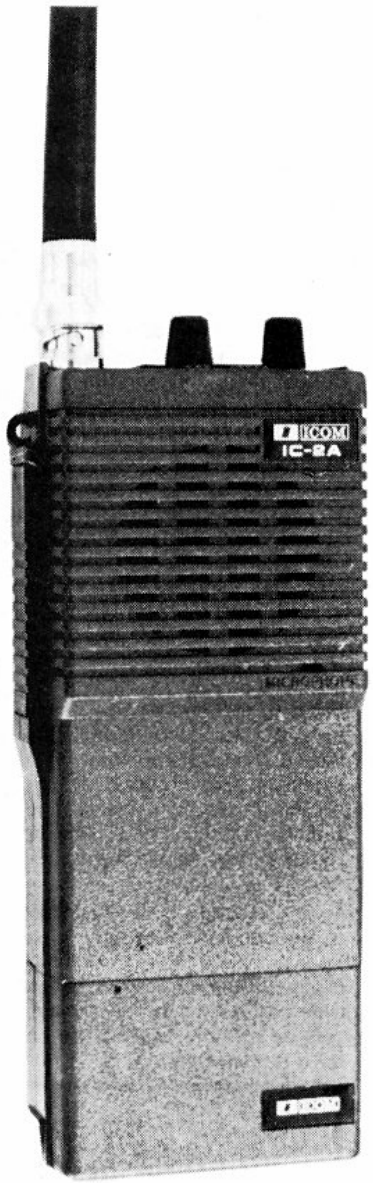
5. You are required to mention at least one of the call letters of the stations with whom you have been talking:
   (a) at the beginning and end of each exchange.
   (b) at the beginning and end of a series of transmissions, and once each ten minutes during the exchange.
   (c) only at the end of a series of transmissions, when signing off.
   (d) none of the above.

6. Repeaters:
   (a) don't cost anything to operate as everything is donated.
   (b) cost a bundle, but are paid for by a small group of wealthy amateurs and supporters.
   (c) cost a bundle and are financed by club member dues and contributions.
   (d) shouldn't expect any donations from users since the airwaves are free.

7. When you talk to a regular user of the repeater who is not a member of the club or a financial supporter, you should:
   (a) tell them they are deadbeats and refuse to talk to them.
   (b) notify the control operator to turn off the repeater.
   (c) try to find out if they understand how the club/repeater operates and invite them to participate.
   (d) try to embarass them into paying or leaving.

From ARNS Bulletin, January 1980, and probably many other sources. ■

"Quality is always the right answer."



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Accessories coming soon:

BP-5	Nicad pack, 2-3W output
BP-6	Nicad pack, 5W output
CP-1	cigarette lighter charger
HM-9	Speaker/microphone
LC-1	Leather case

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*See review "Amateur Radio Action" Vol 2/13

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Portable 2 metre Repeater

Andrew Boon VK7AW
5 Flint Ave., Newtown 7008

This article describes a method of interconnecting two 146 MHz mobile transceivers to form a two-metre talk-through repeater. The circuitry described has been tested on several WICEN exercises in VK7, and performs extremely well.

In order to provide the WICEN group with an effective, portable 146 MHz repeater for use in remote areas of the State, an investigation was made into the possibility of connecting two mobile transceivers together, via an audio patch cord. The Icom IC22S transceiver was selected, as it is the most common type in use in the Hobart area and, as it turned out, the large range of repeater channels available makes it ideal for this application. Using mobile transceivers to form a repeater has several advantages over attempting to construct a separate, dedicated repeater. Firstly, very little extra equipment is required to be transported, since the transceivers are normally on site (with their aerials). Secondly, the cost of extra radio equipment is avoided. This is a very important consideration for a small group with no corporate funds.

The first task was to determine the desensitisation caused when one vehicle is transmitting and a second is receiving on a frequency 600 kHz removed. A location in Hobart was selected from where VK7RAA on Mt. Barrow (near Launceston, about 170 kilometres away) could be heard as a noisy but readable signal. With one vehicle receiving VK7RAA (Repeater 8), the second vehicle moved slowly away, transmitting on Repeater 8 in put frequency. When the distance between the two vehicles was 40 metres, no difference could be detected (by ear) with the transmitter off or on. The transmitter output power was 10 watts, the vehicles both had quarter-wavelength whips in the centre of the roof, and were in the same horizontal plane.

This test was actually carried out at midnight, after a WIA meeting and a few beers. The 40 metres were paced out, so the spacing should probably be quoted as "40 ± 10 paces".

Anyway, on the assumption that 40 metres was an adequate separation, 40 metres of shielded twin audio cable was obtained, and a means of keying one transceiver (the transmitting one) automatically,

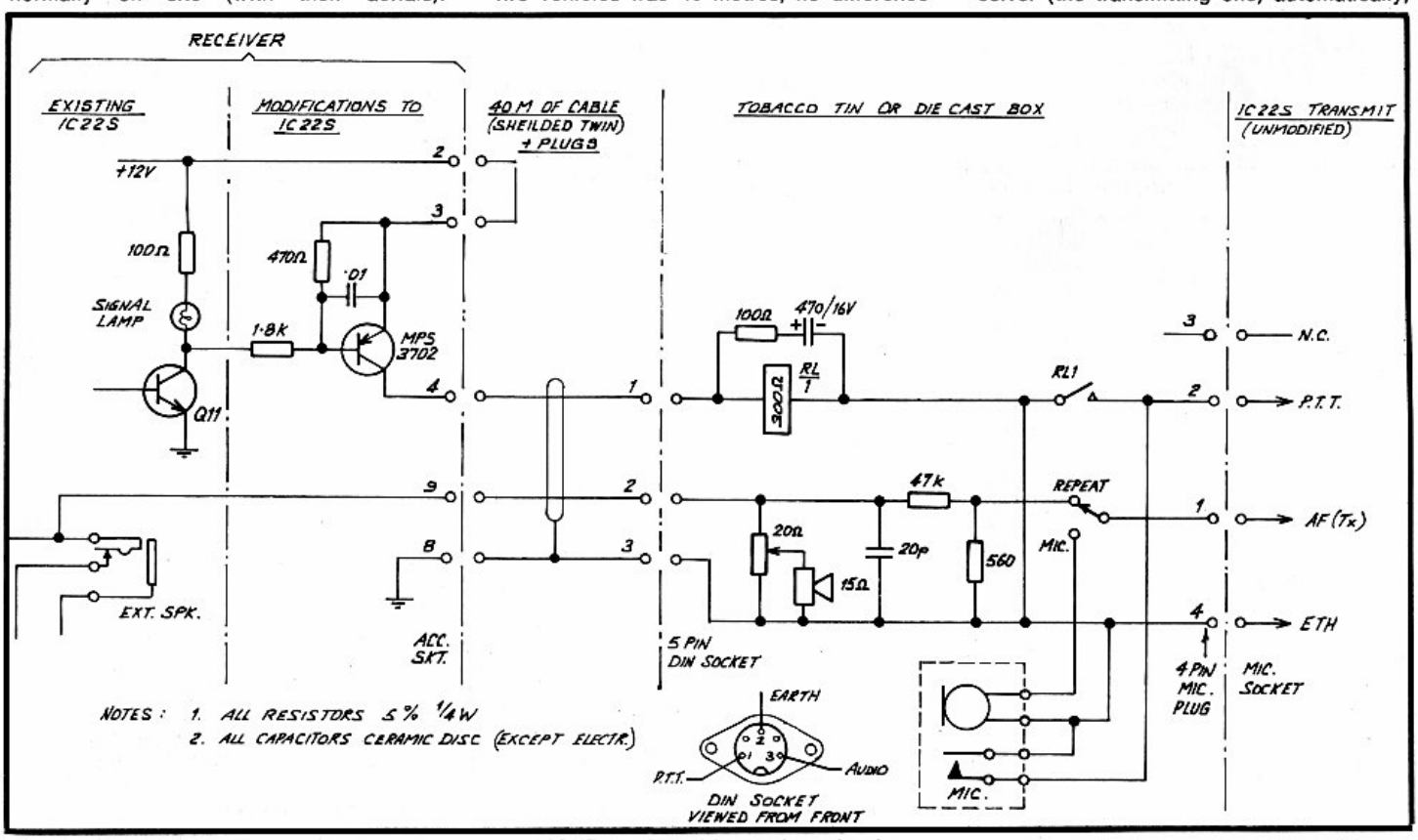


FIGURE 1: Portable receiver circuit.

when a signal was received on the other, was sought. During the course of experimenting, listeners to the particular test channel would have been surprised to hear a local ABC broadcast station, which is normally only heard on 600 kHz. Something about intermodulation . . .?

Some time later the circuit shown in Fig. 1 was developed, and has since proved to be most successful.

CIRCUIT DESCRIPTION

When a signal is received on an IC22S, or whenever the mute opens, the *SIGNAL LAMP* lights and the voltage on the collector of Q11 goes low, to 1.5V or less. This voltage is used to switch on a PNP transistor (shown as an MPS3702, but any general purpose PNP transistor should do), providing 12V along one wire of the shielded twin. This voltage causes relay RL to operate, and RL1 grounds the *PTT* line of the transmitting IC22S, causing it to transmit. Audio from the receiving IC22S is picked up at the *EXT SPKR* socket, and extended via pin 9 of the ACC plug along the second wire of the shielded twin. A monitor speaker is located in the "tobacco tin" (or diecast box for the more affluent). The level of the audio signal is then reduced by a resistive divider, to about 5 mM RMS, which can be fed directly to the MIC input of thet ransmitting IC22S.

After the mute of the receiver closes, RL is held operated for about /.5 sec. by the 100 ohm, 470 uF combination. This provides a "tail" for the repeated transmission.

All components involved in the modification to the receiving IC22S are mounted on a small piece of veroboard, installed immediately behind the *ACC* socket.

In order that an operator with the repeater can pass traffic or identify the repeater, a switch is included to select either the repeat mode or local audio from a microphone plugged into the "tobacco tin".

OPERATION

Ideally the two vehicles involved would be parked on top of a hill, both having a good view of the required coverage area. They are separated by the length of the patch cord (40m). The normal configuration is shown in Fig. 2; for the example shown (Repeater channel 4) the receiving IC22S receives on 146.200 MHz (reverse R4) and the transmitting IC22S transmits on 146.800 MHz (reverse R4). Walkie-talkie, mobiles, etc., can then access the portable repeater by simply selected repeater channel 4. The only adjustment is to the volume control of the receiving IC22S — this is normally set to about 1½ divisions to give adequate frequency deviation of the transmitter.

The operator with the repeater would be located in the vehicle with the transmitting IC22S, with the "tobacco tin" and microphone. From there he can monitor all traffic and manually identify the repeater.

Note that the transmitting IC22S is a standard, unmodified transceiver.

A more interesting mode of operation is shown in Fig. 3. This is a 3 hop repeating system, where a walkie-talkie (for example) operating on a simplex frequency is repeated by the portable repeater to a normal repeater and thence to a second station. The portable repeater in this mode uses two modified transceivers and two patch cords to repeat signals on different input frequencies. The example shown uses channel 50 and repeater 2, VK7RHT on Mt. Wellington (Hobart). This configuration is useful when communication is required between a field party in a remote area and their headquarters in the city. The limits of operation of this mode have not yet been fully explored: some desensitisation will occur as the transmit and receive frequencies are very close, but in many cases the signal from the walkie-talkie and from the normal repeater will be strong enough to overcome this. (A longer cable required perhaps?—Ed.)

CONCLUSION

Five IC22S transceivers in the Hobart area have been modified in the manner described, and patch cords have been produced for these. Portable repeaters have been set up many times during WICEN evercises and field days, and have all performed faultlessly. Using two modified transceivers and two patch cords, the configuration shown in Fig. 3 was tested in a recent exercise with Tasmania Police in the Lake Pedder area of south-west Tasmania. A link was set up between the field headquarters at Lake Pedder and a station at Police Headquarters, Hobart, via the portable repeater at an elevated site and VK7RHT, Mt. Wellington. The portable repeater in this mode performed extremely well.

The portable repeaters have also been used away from vehicles, using yagis to extend the range to difficult areas, using 1 watt transmitter power where the spacing has had to be reduced, and so on. The possibilities are not endless, but still vast. Considering the small amount of effort and expense involved in establishing the repeater, it is considered to be a very worthwhile addition to the equipment of any WICEN group, especially where there is the likelihood of operating in areas not well served by existing repeaters, or as a back-up or extra channel in an emergency. ■

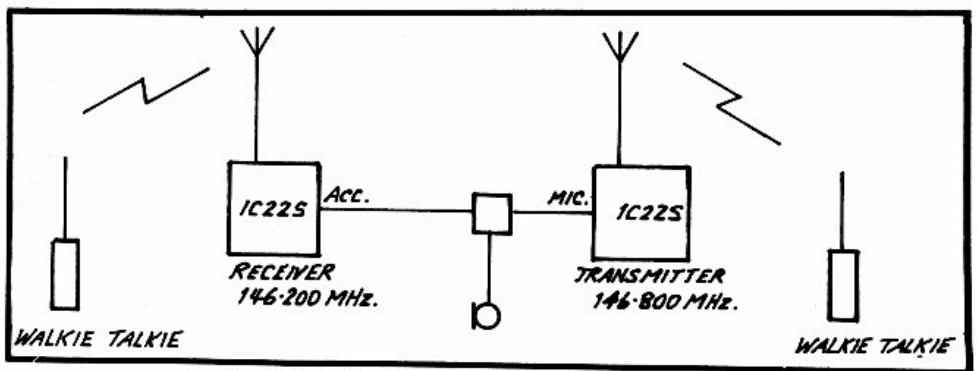


FIGURE 2: Conventional repeater configuration.

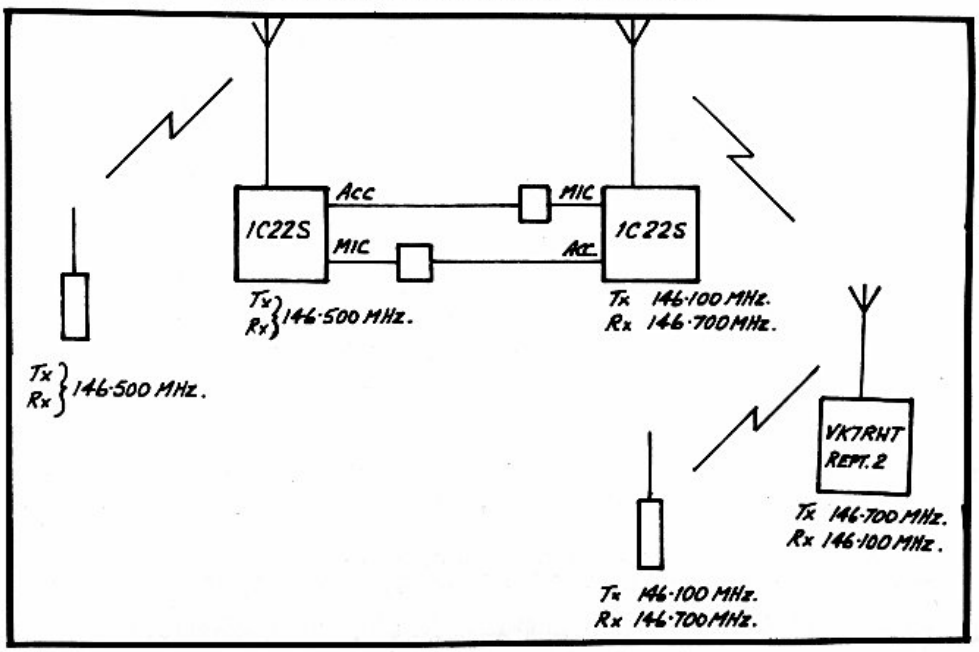


FIGURE 3: The three hop repeater configuration.

NOVICE NOTES

Edited by Ron Cook VK3AFW

To begin let me clear up a couple of points relating to the August issue. Photograph 3 was reproduced upside down so that a transposition of the Scope iron and the temperature controlled iron occurred. Secondly I have been asked what was meant by solder causing "tracks". "Track" is a term used to describe an unwanted path for electricity to flow along. Tracks are sometimes caused in high voltage equipment by moisture and dust collecting between line pins (pins with voltage applied) on valve sockets. A small current starts to flow through the moist dust generating heat and localised burning or carbonising of the insulation. This reduces the resistance and the current rises further causing greater carbonising causing the current to rise even further, and so on. Eventually a fuse or some other part will fail. In low voltage equipment tracks are frequently caused by excess solder joining or bridging across adjacent conductors on a printed circuit board. These tracks are often only whiskers of solder so when a board has been completed it should be carefully examined under a strong light. Small tracks or bridges can be removed with a sharp knife and larger ones by careful use of the soldering iron.

MORE USEFUL TOOLS

Photographs 1 and 2 show a number of tools which most constructors will find as indispensible as those shown in August. In Photo 1 we see at the bottom left a hand drill and on the bottom right is a set of drill bits. A range of drill bits going from 0.6 mm for printed circuit work to 6 mm for component mounting holes will be required. An electric drill (6 mm chuck) with a drill stand would be better but most work can be done with the less expensive hand drill provided that a vyce and/or a G-clamp are available to hold the work.

At the centre bottom of Photo 1 is a tapered reamer, which is used for opening out holes bigger than 6 mm diameter. The round file, centre, can be used for larger holes. Below the file to the right is a star reamer, which is used to remove burrs that form on drilled holes.

To mark out the place for a drilled hole requires a square (top right), ruler and prick punch (top left). The square is placed firmly against an edge and can be used for drawing lines at right-angles to the edge. The ruler is of course used to measure along the line the desired distance. The ruler and square are then used to mark and measure from an adjacent edge to locate the hole centre. A sharp F pencil is recommended for marking out. Although many constructors prefer a scriber (a sharp pointed metal rod about 3 mm in diameter) because it gives an accurate line that will not rub off when touched, it is not easily burnished off front panels. Pencil lines are easily erased with a soft rubber. The punch is used to make a small indentation at the hole's centre to locate and start the drill. The one shown is spring loaded and is pressed against the surface causing it to trip and drive the point into the metal. A less expensive version must be hit with a small hammer.

Beneath the square is a solder sucker. This tool removes solder from joints when a component must be removed. It has a small nozzle in front of a tube containing a spring loaded plunger. The solder is carefully melted with the soldering iron and the nozzle of the sucker held so as to just touch the joint. Pressing the trigger causes the plunger spring up the barrel drawing up the molten solder and leaving the joint clean.

The remaining item is a spot face cutter for quickly and neatly cutting tracks on veroboard. Verobard is a pre-drilled board with about 30 parallel copper tracks running along the board. It is most useful when printed circuit board facilities are not available.

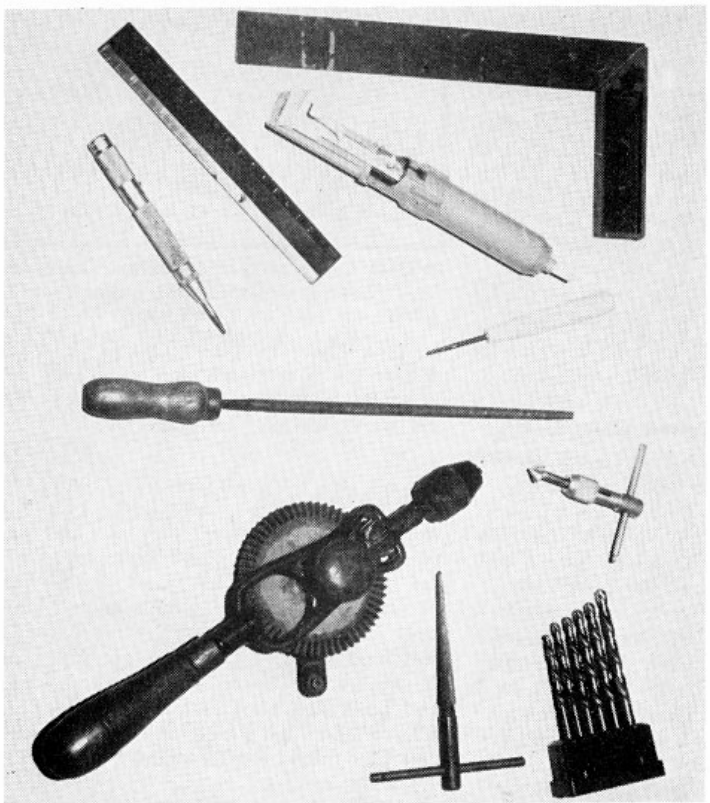


PHOTO 1: More hand tools for the constructor.

PHOTO 2: Hand tools for metal work.

All the tools in Photo 2 are useful for making or working with boxes and chassis. Large round holes can be made with the hole punch set shown bottom right. The nibbling tool, bottom left, will make square and rectangular holes once a 6 mm hole has been drilled.

For cutting up sheet-metal to make small boxes (see p. 16 AR May 1979) the tin-snips, top centre, will be required. The wood chisel can be used on aluminium to deburr rectangular holes.

The sturdy artist's brush is used with methylated spirits to swab off resin flux from printed circuit board, and for brushing away metal filings and cuttings (swarf).

FILES AND FILING

To straighten and square up edges cut by tin-snips and to finish off rectangular holes requires a file. Files come in a variety of sizes and cuts. The size is related to the file's length, 150 to 250 mm being the most useful for the novice. For getting a smooth finish a file with small teeth is recommended. These are called single cut files. For taking off more metal bastard cut, double cut or second cut files are best.

There are two basic filing actions to be mastered. The normal stroke is used for removing the maximum amount of metal and for sharpening tools. The handle is grasped in one hand with the forefinger and thumb pointing along the body of the file. The file is laid flat on the work with the tip extending a little past the work. The tip is steadied with the free hand and the file stroked firmly and briskly forward while keeping firm downward pressure. The downward pressure is released for the return stroke: as the file cannot cut when drawn back toward the body, it is better to lift the file clear on the return stroke. The amount of downward pressure during the cutting stroke controls the depth of cut.

The cross-file stroke is used to square off and finish narrow edges. The file is held by its body in both hands. The body is placed flat on the work with the work roughly central and at right-angles to the file. The thumbs are put behind the file on the rear edge on either side of the work and the fingers on the other edge. The file is then pushed firmly away from the body for the cutting stroke. It is lifted for the return stroke.

The work must be firmly held in a vyce and a comfortable stance adopted.

After a little use some metal filings will become trapped between the file's teeth. The file card (top left in Photo 2) is a wire brush designed to brush out these filings and so return the bite to the file.

OTHER TOOLS

As mentioned before, a vyce is necessary when drilling and filing. It should be mounted on a proper work bench; the kitchen table is too light and your XYL may not take too kindly to having holes drilled through the table top for the 10 mm mounting bolts.

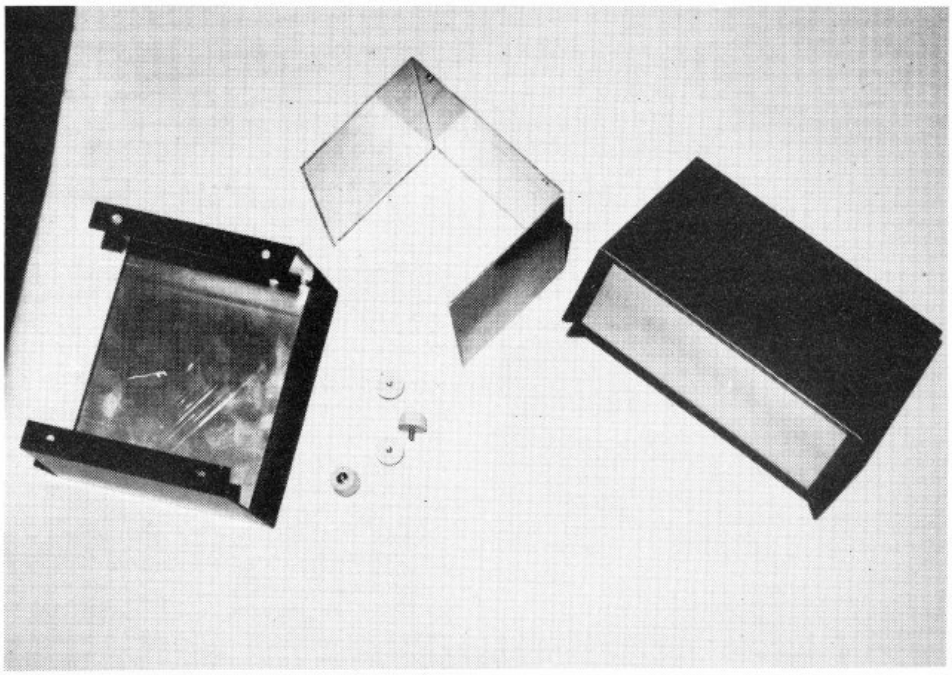


PHOTO 3: Two useful boxes.

After the first few projects are finished you may find that other tools such as a soldering stand, heatsink clips, a brake type metal bender and a hacksaw are required to grace your growing workshop.

Until you decide to make your own cases and boxes, handy little ones such as those in Photo 3 can be bought from Dick Smith and other suppliers. The one on the left is easy to duplicate.

SAFETY

Always work safely. Wear safety goggles when using a drill (in case a bit snaps and pieces fly out) and when grinding or cutting. Clean up any rubbish in the work area and don't stack things in piles. Most metal edges are very sharp — running your finger along the edge can give you a nasty gash. Use double insulated electrical tools and beware of faulty extension cords. When clipping off the excess pigtail on components turn the side-cutters so that the cut-off wire will not strike you in the face if (when) it flies out.

SCAVENGING

Every amateur needs a "junk box". It is a place to squirrel away all nature of items for a rainy day project. One of the construction articles coming up in this column makes use of a large variable tuning capacitor of about 1200 pF as shown in Photo 4. Similar units can be found hiding in the bottom of the garages of neighbours and relatives. All the old valve radios and radiograms used these capacitors and the owners of such can often be persuaded to part with them at no charge. If you have just erected a new TV aerial or made up an extension cord, etc., don't accept money or a sponge cake — ask for that old radio in the garage. Alternatively, if you have a trip to the tip to make, offer

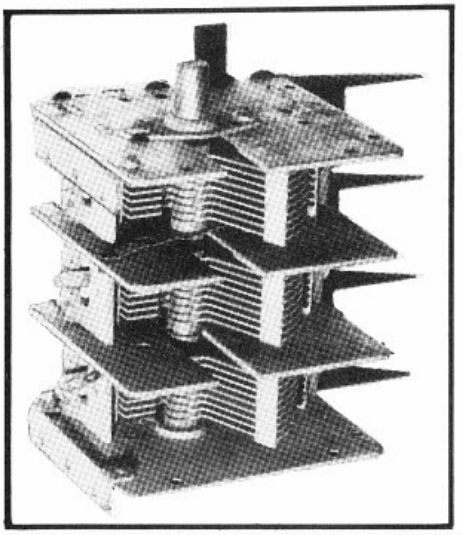


PHOTO 4: A variable capacitor. Scavenge one for a forthcoming project.

to take some of their rubbish. A quick detour via your shack and your junk box is on the way. The power transformer and the knobs will also be useful.

Old TV sets yield power transformers, lengths of wire, diodes and sometimes transistors. Paper capacitors are not worth consideration — they are the wax covered ones. Most electrolytic capacitors are oversize and past their prime. The choice of what else to keep is an individual one. As a rule it is worth while carefully scrutineering any electrical apparatus on its way to the tip as even the brass nuts and bolts are more valuable to the constructor than just their scrap value. If your junk box grows too large there are always the white elephant sales.

Next time I hope to have some readers' contributions on antennae. ■

VK CW QRP

J. Swiney VK6JS

CW QRPp is alive and well in VK! 30-plus members at the end of six months in existence (June 1980) and still increasing.

As a result of numerous enquiries and suggestions the VK CW QRPp Club is seriously looking at an extension into international spheres but we intend to examine precise parameters for Club scoring before their formulation in the scoring formula. As an initial prod into this possibility we give below the following information.

A very interesting development for all CW QRPers in VK has ensued from our correspondence with Ade Weiss W0RSP, QRPp Editor for CQ Magazine. We are proud to announce that we have received "check-point" status for the CQ Magazine "DXCC QRPp" and "DXCC MILLIWATT" Awards. The latter is deemed to be the most difficult award to attain in existence!

Of course, this has been extended to me in my official capacity as VK6 Awards Manager for the WIA and is my consideration of a real honour! I have the authority, therefore, to verify applications from VK amateurs for these awards. At the last listing in CQ for March 1980 only 12 stations world-wide have made "DXCC QRPp" and 2 for "DXCC MILLIWATT". How about a VK call sign appearing on one of these lists? We've all heard of challenges in gaining some awards but how's this for real effort!

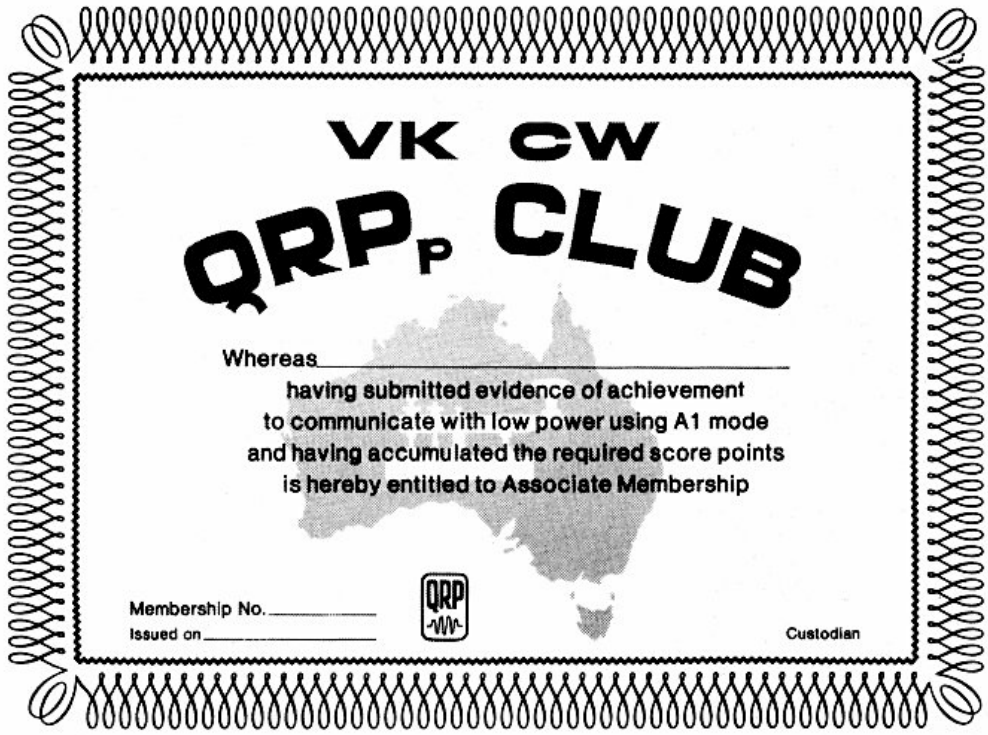
Another interesting item of news for QRPers is the planned very-low-power "activity" initiated by the Michigan QRP Club for January 1981. No information to hand at the present time but we hope to have complete details in a coming bulletin.

Ade Weiss and myself are attempting to line up with the DL-AGW Club, the G-QRP Club and the Benelux QRP Club for a simultaneous DX and local QRPp venture. It will purport to be the first international hook-up of low-power enthusiasts ever and could be a milestone in present-day amateur radio!

Let's keep in mind the insistence that CW QRPp operation has its place as a respectable aspect of this great hobby of and activities, each with its own rewards ours which encompasses so many modes and achievements, and try a periodical bash on very-low-power CW and discover the need for a perpetual memory of our early pioneers in amateur radio who were instrumental in laying the foundations for all of us who today enjoy personal communication and experimentation in the science of "Radio".

It's very important to remember **where we came from** as well as where we're going!

Publicity in past issues has certainly increased membership and it is good to see interest in both home-brewing low-power rigs for various bands **and** improving morse proficiency.



The QRP CW certificate shown (above) is awarded to stations gaining twenty points or more with less than 5 watts output.

It was hoped that our recruitment of members would be at the rate of five per month, but lately this figure has been well and truly surpassed. We welcome all our new members to the Club and sincerely hope you enjoy the benefits of low-power operation.

Jack VK3NQA is an ex-PMG telegraphist, who will no doubt keep us on our toes with excellent CW. Jack is QRV with home-brew gear on 10, 15 and 80 metres from his QTH in Elsternwick. Reg VK3BPG from Kilsyth has had an interest in QRP for some time and thinks that home-brew is the answer. He is looking for as much information as possible on home-brewing. Rai VK7NRT from West Moonah has the honour of being the first VK7 in the Club and runs a Ten Tec Argonaut 509 and has to date 85 countries using low-power exclusively.

Col VK3BMJ from Ringwood is gearing himself for QRP work and is looking for circuits and constructional articles . . . Bill VK2WN from Wollongong has a souped-up job with output of 0.3 watts on a good day, While Rob VK6NFA in Gosnells will be active shortly with his gear . . . Pete VK2DAB up north in Griffith has nearly completed the power supply for his 200 mW, yes!! 200 mW Tx for 3.540 MHz, so keep an ear to the receiver for his signal . . . Mario VK3NZF in Sunshine is looking for constructional tips for a home-brew rig on 80 metres only and is keen to accumulate scores and have some fun . . . Kevin VK3AUQ from Mount Evelyn is a home-brewer from way back and is active on all bands with exclusive home-brew gear and can be found on 3507 kHz (although rumour has it he is going to sneak into the novice portion of the band from time to time). Other new members include Ted VK4NZG (Brisbane), Len VK5ZF (Richmond, SA), Rob VK5NBZ (Hyde Park) and Jim VK6ZN (Albany), who incidentally has just returned to the amateur bands after a 14-year lay-off. Just goes to show that once bitten you can't get it out of the system!

Maggi VK3NQQ and Lou VK3VEU are our first XYL and OM team. Maggie and Lou share (?) an Argonaut 509 and would like to build a HW-8 or similar. Tim VK5NEB/ZEV also runs an Argonaut 509 and has already secured a good tally on 80m. Bob VK3VDI has attained DXCC and WAS and now is looking for another challenge in CW at QRPp power. Other new QRPers include Stan VK2NBE, Stewart VK4VAP and Terry VK4TH.

Well, that is all for now, until next time, 73 and good QRPing! ■

AMATEUR SATELLITES

R. C. Arnold VK3ZBB

Both Oscars 7 and 8 continue to perform satisfactorily. AO7 appears to be running out of the earth's shadow and as predicted will be clear early in August. Although it is not confirmed, AO7 appears to be again under control and it would not be surprising if it reverts to alternate day operation for Modes A and B.

The following release of updated information on the UK UOSAT will be of interest.

PROJECT SUMMARY

An AMSAT team at the University of Surrey is constructing Britain's first amateur satellite. The mission objectives of the UOSAT spacecraft represent a departure from the traditional AMSAT-OSCAR satellites — so far oriented predominantly towards providing improved long distance communications for amateur radio operators at VHF and UHF. UOSAT will complement the OSCAR series as an experimental and scientific amateur spacecraft.

MISSION OBJECTIVE

The mission objectives are:

— To provide radio amateurs with a readily available tool for the study of the propagation medium through which they communicate from HF to microwave frequencies.

— To stimulate a greater degree of interest in space sciences in schools, colleges and universities by active participation.

— To broaden the scope of the Amateur Space Programme and to cater for the interests of "amateur scientists".

— To establish an active body in the UK with the necessary resources to contribute flight hardware to the AMSAT programme.

— To evaluate the suitability of novel methods and new frequencies for use in later amateur spacecraft.

PAYLOAD

The payload is considered in two components — service modules and experimental modules. The service modules comprise al Ithe functions fundamental to the basic operation of the spacecraft, such as the power sources, power conditioning, telemetry and telecommand systems and assume the highest priority during construction and testing.

The experiment modules comprise:

Propagation—Phase reference HF beacons on 7, 14, 21 and 28 MHz.

Studies — 3-axis, multi-range, flux-gate magnetometer.

Experiment — Particle radiation counters; 2.3 GHz beacon; 10.47 GHz beacon.

Education — Earth-pointing slow-scan TV camera.

Experiments — Synthesised voice telemetry system.

Future Systems — Two-axis, earth-pointing gravity gradient spacecraft stabilisation system.

Experiments — On-board microcomputer (image processing, telemetry and command management, data store and dissemination).

RESOURCES

The project is supported primarily by British Industry and Research Organisations, AMSAT, RSGB and the University of Surrey. This support takes the form of cash (£85,000), components and test facilities.

The project team comprises three full-time personnel —

Martin Sweeting G3YJO (Post-Doc. Research Fellow), Project Manager;

Shu Kin Lee (Research Student), SSTV experiment;

Ian Ferebee (Project Technician);

and some 30 part-time voluntary personnel of which 12 are within the University.

PROGRESS

The UOSAT project has been under way for just over one year and the position is as follows:

— The spacecraft system design has been completed.

— The structural design has been completed.

— Two spacecraft structures are being assembled.

— The interface and launch vehicle attach fittings have been fabricated.

— The honeycomb side panels are being bonded and trimmed to size.

— A breadboard telecommand receiver has been completed and is under test.

— A breadboard telemetry module is under construction.

— A 145 MHz beacon has been constructed and tested.

— A simulation of the UOSAT SSTV image has been completed using TIROS-N image data. The display will probably be a 256 x 256 digital format with a 3 or 4 bit grey scale.

— The SSTV imaging system is under development using a CCD two-dimensional array.

— A preliminary analysis of the gravity gradient attitude control system has indicated satisfactory operation to be practicable with a 3 metre boom and a 2.5 kg tip mass (which will also house the magnetometer sensor).

— The 10 GHz beacon is under construction at Sheffield University.

— The VHF and UHF aerial design is complete and pattern tests are scheduled for June 1980.

— The honeycomb side panels are being bonded and trimmed to size.

LAUNCH

NASA have agreed to provide a launch for UOSAT (at no charge) as a "piggy-back" secondary payload on a Delta 2310 with the Solar Mesosphere Explorer (SME) mission scheduled for launch into a circular, polar orbit in September 1981. The programmed orbital elements are as follows.

Height: 530 km, 3 PM descending node.
Inclination: 97.5 degrees, sun-synchronous. ■

QSP

ICOM/KENWOOD GEAR

Did you know there is an association of owners and prospective owners of Icom and Kenwood products which publishes a newsletter ten times a year containing a wealth of information for such users? If interested, send SASE to Users' International Radio Club, 9600 Kickapoo Pass, Streetsboro, OH 44240, USA. ■

VHF-UHF

An expanding world

Eric Jamieson, VK5LP
Forreston, S.A. 5233

VHF/UHF BEACONS

Freq.	Call Sign	Location
50.005	H44HIR	Honiara
50.020	GB3SIX	Anglesey *
50.023	HH2PR	Haiti
50.025	6Y5RC	Jamaica
50.035	ZB2VHF	Gibraltar
50.036	HC1JX	Quito
50.038	FY7THF	French Guiana
50.040	WA6MHZ	San Diego
50.048	VE6ARC	Alberta
50.050	ZS3E	South West Africa
50.055	ZL1UHF	Auckland
50.060	PY2XB	Sao Paulo
50.070	YV5ZZ	Caracas
50.070	VP9WB	Bermuda
50.080	W1AW	Connecticut
50.080	TI2NA	Costa Rica
50.085	WA6JRA	Los Angeles
50.088	VE1SIX	New Brunswick
50.089	WD4CEI	North Carolina
50.100	KH6EQI	Pearl Harbour
50.104	K4EJQ	Tennessee
50.105	KC4AAD	McMurdo, Antarctica
50.110	KH0AB	Saipan
50.110	AL7C	Anchorage
50.120	4S7EA	Sri Lanka
50.144	KC6IN	Ponape, Caroline Is.
50.498	5B4CY	Cyprus
51.999	YJ8PV	New Hebrides
52.200	VK8VF	Darwin
52.250	ZL2VHM	Palmerston North
52.300	VK6RTV	Perth
52.330	VK3RGG	Geelong *
52.350	VK6RTU	Kalgoorlie
52.400	VK7RNT	Launceston
52.440	VK4RTL	Townsville
52.450	VK2WI	Sydney
52.500	JA2IGY	Mie
52.500	ZL2VHM	Palmerston North
52.510	ZL2MHF	Mt. Climie
52.800	VK6RTW	Albany
52 900	VK6RTT	Carnarvon
53.000	VK5VF	Mt. Lofty
144.010	VK2WI	Sydney
144.162	VK3RGI	Gippsland
144.400	VK4RTT	Mt. Mowbullan
144.475	VK1RTA	Canberra
144.500	VK6RTW	Albany
144.600	VK6RTT	Carnarvon
144.700	VK3RTG	Vermont
144.800	VK5VF	Mt. Lofty
144.900	VK2RTX	Ulverstone
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.400	VK4RBB	Brisbane

* Denotes new listing.

No changes to the beacon list this month, only to say that Daryl VK3AQR has confirmed the Geelong beacon on 52.330 is now operating with its 25 watts and initial reports indicate the beacon is being heard well in VK3 and it has been heard in New Zealand. The Geelong Amateur Radio Club would be pleased to receive any reports of reception, and these may be sent to Box 520, Geelong 3220.

The above listings will appear during the early part of the spring equinox when there may still be a possibility of sufficient solar activity at times to make some more overseas contacts possible. The list will probably be repeated in full the next month, after which there will probably be little point in keeping all the stations listed.

There certainly has been a most serious dropping off in 52 MHz contacts, I doubt if anyone quite expected it to be so sudden. One of the best summaries of the late equinox contacts from April onwards in the Pacific area is contained in the SMIRK newsletters, and the following may refresh your memory or be news anyway.

The contacts from VK2, VK3, VK5 and VK7 to XE1GE have already been reported for April, working split frequency 52/50 MHz and odd multiples of a MHz apart at that! FO8DR during March/April worked YJ8PD, H44PT, VK4HD, 3D2CM, H44DX, 5W1BZ, JE3EX, JR6BG, and reports Ken JA2BNT has now contacted 42 countries on 6 metres! W6HTH/KH6 now has his antenna system 31 stories high, and working 5W1BZ, A35DX, P29ZFS, FK8CR, ZK2AE, VK4RO, AH8A, KX6QC, VK4KT.

6th ANNUAL SMIRK PARTY

This contest held on 6 metres in June certainly fizzled out as far as VK was concerned. Conditions were just so poor that I couldn't even rustle up one contact with another SMIRK member, and I see by the result sheet it was won, as expected, in USA by Lefty Clement K1TOL, who scored 18,352 points. 105 W stations entered, 3 from Canada, 15 from JA, plus PJ2DW and P29ZFS. As someone commented, June doesn't suit the southern hemisphere; April would probably be better, and possibly more interesting as it would be away from Es seasons around the globe. This will in turn probably mean less entries from USA stations, but you can''t have it both ways!

VK3 TO ZL

Talking to Daryl VK3AQR, he mentioned the consistently good signals from ZL TV during June/July culminating in a contact with ZL4LT on Sunday 20-7 mid-afternoon local time when snow free signals on TV were evident. The generally very widespread coverage of ZL TV throughout Australia leads one to believe the lower frequency (50.750 MHz) still reflects the oft quoted opinion that 50 and 51 MHz often open up but 52 MHz misses out. Look at the number of times ZL TV was heard in Carnarvon, WA, this year, but ZL amateurs heard precious little of Andy VK6OX and others from over there.

FROM WESTERN AUSTRALIA

Tony VK6BV has written with the sad news that gale force winds on 20-6 badly damaged his 6 and 2 metre antenna system, so is out of action for the time being. That's bad, I know what it's like myself!

However, before the destruction Tony had completed his long awaited 2 metre linear and had had contacts with VK6WD, VK6CU, VK6ZZ, VK6HK all in Perth, VK6ZFQ Katanning, VK6XY Albany and VK6AM Busselton.

On 6 metres worked VK5ZPW and VK5ZRY on 15-6 0400 to 0530Z. Wagga TV occasionally heard, also ZL TV and the odd JA on 50 MHz; so it's been quiet in the west, too. Thanks for writing, Tony, and hope you can get the antennae fixed soon.

NATIONAL VHF FIELD WEEKEND

The Geelong Amateur Radio Club confirms it will be sponsoring a National VHF Field Day Weekend coinciding with the start of the Ross Hull Memorial Contest on Saturday, 6th September. Rules will agree largely with those of the Ross Hull Contest, but I hope to have more details for the next issue. This date is usually a weekend for VHF Field Day workings in New Zealand as well, so if people will give the idea some support some very interesting contacts might well result.

And while we are on the subject of Field Days, I would like to again draw your attention to my remarks in the last issue when I raised the matter of using mains power for portable/field day operation. I believe they are very relevant, and passed the thoughts along to Daryl VK3AQR for consideration of the Geelong boys. Anything which will get more people to operate in the field day is worth considering. Some limitations are necessary in the way of linear amplifier usage of course, and I suggest 100 watts RMS would be reasonable, bearing in mind the output of the 551 rigs; the line should surely be drawn at the use of 2 x 4CX250B linears and similar!

I would like to throw in one more reason why use of 240 volt mains has some value. Several years ago when I operated portable from Myponga Hill (before it rained!) several of the local residents came to the hill top to see what was going on. Fortunately I was on Crown land so I couldn't be moved, but they were not too impressed with the alternator running in the summer time. Certainly it was on cleared ground and pretty safe, but one never knows what can happen under windy conditions, so I did feel uneasy, doubly so as I have been a fire control officer myself for 25 years. Summer time operating might be just that much safer connected to the mains! Your thoughts please, and don't be too abusive, you purists!

Anyway, I would like to make an effort and go out portable for the weekend of 6th December, but as I don't have an alternator and live 25 miles from the closest one in Adelaide my support does seem to be dependent on whether the mains can be used. I have an elevated site in mind if this will be permitted. I am sure others will go, too, if they can run their transceivers on the mains instead of flattening their car batteries with extended periods of operation. I have already looked at my portable antennae and they are still in good condition, ready for action!

QTH LOCATOR SYSTEM

In response to moves being made chiefly in Region 1 of IARU through Folke Rasvall SM5AGM, of Sweden, I would like to present here details of a QTH locator system which is suitable for world-wide applications, and which with other possible systems was discussed at a VHF Managers' Conference in London last April.

A locator is essentially a map reference, allowing the position of a station to be easily and concisely transmitted, giving sufficient information for the position of a station to be calculated with reasonable accuracy. The use of a scientific calculator or computer allows rapid and accurate conversion from locators to bearings and distances, without the uncertainties introduced in trying to make measurements with a ruler on a map. Who has reasonably detailed maps of everywhere they are likely to work anyway? Then there is the matter of awards and the like. The basing of these upon the usually geographically arbitary placing of international boundaries is absurd on VHF/UHF, where DX usually does mean distance, rather than rarity. A locator system allows a somewhat fairer assessment of achievement to be made by permitting the number of locator areas, rather than countries, worked to be the basis of an award.

REQUIREMENT

Having decided that a locator system is highly desirable, if not essential, it is worth looking at what features and characteristics it should have for amateur use. The following list is roughly graded into order of importance.

(1) GLOBAL

The locator should cover the whole of the earth's surface. This is becoming increasingly important in these days of satellites, moonbounce, TEP and other trans-continental modes on VHF/UHF.

(2) POSITIONALLY UNIQUE

A given locator reference should specify only a single area of the earth's surface, the size of this area depending on the precision of the system in use.

(3) NO AMBIGUITY IN LOCATOR

A given position should have only one possible locator.

(4) BREVITY

The locator reference should be as short as possible, given other constraints. This is, after all, the reason for using a locator in the first place.

(4) CONSISTENCY OF FORMAT

The locator should have a constant basic outline — e.g. two letters, two numbers, two letters. Not only does this make copying the locator easier, but to allow a particular character to be either a letter or number is bound to lead to confusion. (Try writing XYIOZS with XY1420 underneath, in your usual scrawl. Then see if someone else can tell the letters from the numbers!)

(6) PRECISION

The locator must be capable of specifying the location of a station with reasonable accuracy. This requirement is clearly in conflict with that for brevity. It is suggested the smallest squares should be about 5 km for general use.

(7) COMPATIBILITY

Region 1 already has a fairly good system in operation called the QRA system and many operators have been entering contests and awards on the basis of this system. If a new locator system is to be adopted for world-wide acceptance, then G9BF, having just worked his 250th big QRA square on 2 metres, is going to be justifiably annoyed if he has to start all over again! If the new system is suitably compatible with the present QRA, however, it will be possible to translate from one to the other, with no ambiguity, thus allowing awards and lists to be continued.

(8) BIG SQUARES AND LITTLE SQUARES

For lists and awards, fairly large squares are needed, and these should be describable as a part of the whole locator, e.g. ZL34BA is in ZL square. Again, the feeling seems to be that the present QRA system has this about right. Make the "big" squares too big, and those running low power from the valley will seldom get the chance to work anything new. Make them too small, and every other contact will be in a new square.

John Moyle Memorial Field Day Contest, Results 1980

24 HOUR DIVISION

Section (A): Portable Field Station Transmitting Phone.

VK5CCT	5481	VK3APZ	431
VK4NFU	2638	VK4VX	420
VK3NZM	2422	VK4AAQ	420
VK2VNP	1910	VK4ADB	420
VK4XZ	1390	VK4ARH	420
VK5NNC	1309	VK4NDX	360
VK6TJ	1109	VK4NHS	360
VK2BDT	594	VK5ABS	202
VK5NTV	456	VK4NLV	80
VK4AHO	440	VK4NDW	60

Section (B): Portable Feild Station Transmitting CW.

VK5ZE	544

Section (C): Portable Field Station Transmitting Open.

VK5OR	2272

Section (D): Portable Field Station Tx Phone Multi-operator.

VK4WIZ	12321	VK1ACA	3190
VK2MB	7690	VK5ACE	2861
VK3BGG	5008	VK5LZ	2758
VK4ARZ	4025	VK5PP	1931
VK4WIP	3893	VK4WIM	1919
VK3BML	3501	VK2BNR	997
VK3XK	3230		

Section (E): Portable Field Station Tx Open Multi-operator.

VK3ATL	17046	VK4WIT	5701
VK3APC	11936	VK5SR	5368
VK2DBK	10070	VK7NB	3055
VK2WG	9650	VK3AWS	3028
VK3ATM	9580	VK5VE	2945
VK3ANR	9437	VK5WC	2899
VK8DA	6068	VK5ARC	2512

Section (F): VHF Portable Field or Mobile Station Tx.

VK3XQ	2214	VK4ZRQ	300
VK3ZJS	1504	VK2DBA	74
VK2BNR	398	VK1LF	66

Section (G): Home Transmitting Stations.

VK3XB	1850	VK3AEW	1260
VK3KS	1405	VK7NFR	255

Section (H): Receiving Portable or Mobile Stations.

L40804	Nancy Heaton	1475
L40018	Charles Thorpe	495

6 HOUR DIVISION

Section (A): Portable Field Station Transmitting Phone.

VK3VKZ	1335	VK4NBW	506
VK2BTZ	1152	VK3AKJ	435
VK3SP	1022	VK2DCW	379
VK5MX	1009	VK3YRP	320
VK1RP	929	VK2BUT	307
VK5AIM	859	VK5NEB	215
VK2VWH	690	VK2NMK	200
VK3HE	678		

Section (B): Portable Field Station Transmitting CW.

VK3TX	558	VK2JM	504

Section (C): Portable Field Station Transmitting Open.

VK2EL	1249	VK2VUT	569
VK4UX	916	VK3VF	509
VK1DL	820	VK2GT	250

Section (D): Portable Field Station Tx Phone Multi-operator.

VK4WIN	3152	VK4NLX	1161
VK3ATO	2392	VK3BRL	1157
VK3BTH	1980	VK3CAU	936
VK5KR	1675	VK2BSU	518

Section (E): Portable Field Station Tx Open Multi-operator.

VK3ABP	1608

Section (F): VHF Portable Field or Mobile Station Tx.

VK3AVJ	648	VK2EL	94
VK3YIW	576	VK2ZQC	40

Section (G): Home Transmitting Stations.

VK3ZI	645	VK4VOJ	160
VK5OU	600	VK2YGL	120
VK2BQS	560	VK4VCE	45
VK4LT	455		

Section (H): Receiving Portable or Mobile Stations.

L60036	P. K. Dean	1077
L50505	Robert Dayman	460
L30042	Eric Trebilcock	260

Check log from VK1CC.

RESULTS OF THE 1979-80 ROSS HULL MEMORIAL CONTEST

Outright winner of the trophy is Ray Naughton VK3ATN.

Section (A): Transmitting Phone.

Call Sign	7 Day	48 Hour
VK2BYX	1244*	604
VK2BYX	720	316*
VK2BQN	578	284
VK2HZ	602	246
VK2YEP	238	80
VK3ATN	3320	1402
VK3YLD	1214	392*
VK3AUI	900	383
VK4DO	2242*	768
VK4ZNG	1719	724*
VK4ZTV	596	262
VK4ZCO	264	84
VK5LP	944*	442
VK6OX	422*	152

* After a score denotes a certificate winner. ■

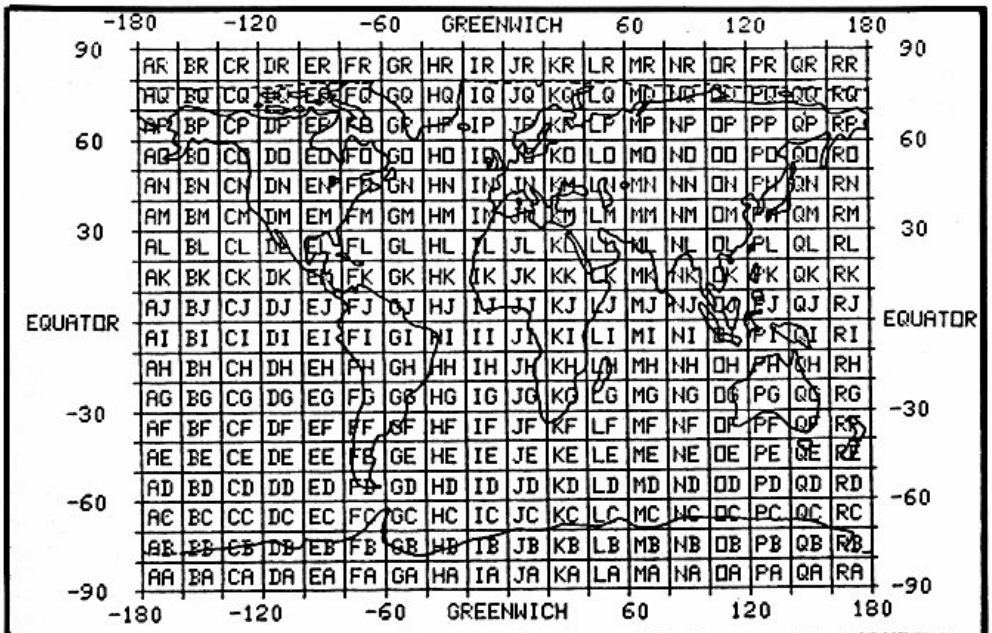
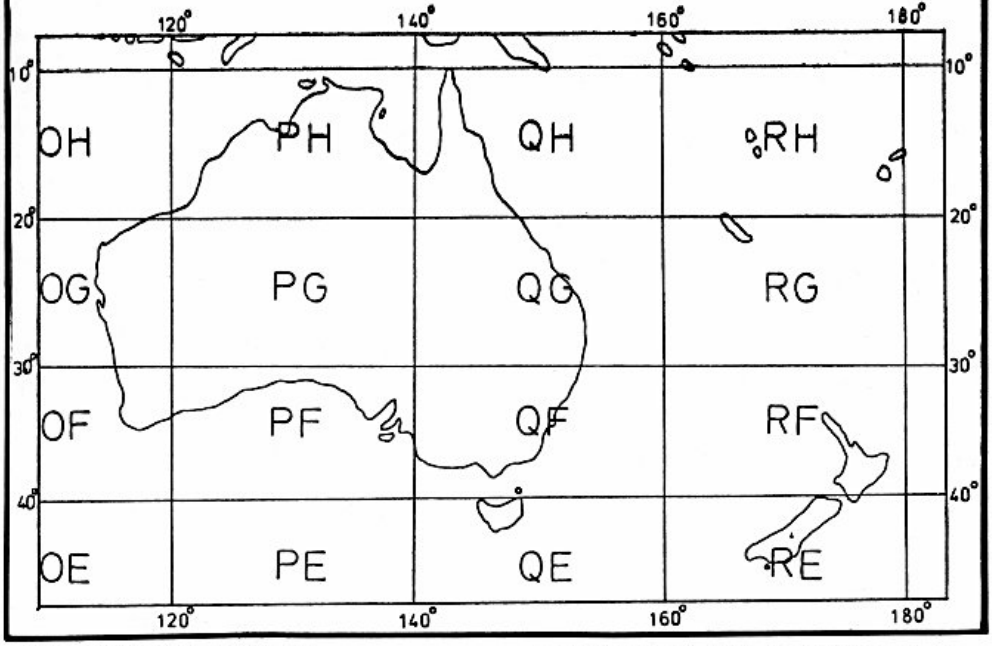


FIGURE 1 (above) shows a proposed locator system for world wide use, while FIGURE 2 (below) gives an enlarged view of those grids affecting VK and ZL amateurs.



(9) LETTERS AND NUMBERS

Locators consisting of just letters or just numbers seem for some reason to be more difficult to copy and remember than those with a mixture.

(10) SIMPLICITY

Given all of the above constraints, the system should be as simple as possible to translate to and from latitude and longitude.

MODIFIED G4ANB SYSTEM

This system was adopted at the London Conference of VHF Managers as an official IARU Region 1 proposal to other regions, and regions such as ours (Region 3) are asked to have a look at this system and hopefully give some answers in time for the next IARU Region 1 Conference on 27th to 30th April, 1981. Consultations are similarly being undertaken in Region 2.

Associated with this information is a map of Europe set out with locator squares under the proposed system, showing in large letters the large square ident, with each of these large squares being further divided and numbered as you see on the map. Information is also provided on a sample selection of longitude and latitude converted to a locator square.

Also provided is a map of the world showing how the globe is divided into large squares, 20° x 10°, and the other map shows how the region around Australia is divided into portions of 10 squares.

A QTH locator system has been in use in Europe for over 20 years, and thousands of hours have been spent in gathering contacts using these squares. Therefore, middle units of size 2° x 1° have been used to preserve these contacts already made. Additionally, if we tried to get 1° x 1° as middle units, the only solution would have been to use two letters to divide the earth's circumference into 360 parts, since 26 letters and 10 digits give only 260 combinations. Since we do not want to have only letters in the locator there are only 10 digits left, giving the smallest unit 6' x 6'. With the present solution the smallest unit is only 6' x 2.5' giving better accuracy.

All this represents an outline for a proposal which does have a lot of merit, and I would ask each of you to look at it seriously and give me some feedback on your views, at least to indicate in due course how we feel about the locator system in Region 3. It will take you a little while to get the hang of the system, but after a while it does unfold in the brain and you can then appreciate what it could mean to everyone if it could be adopted on a world-wide basis. Over to you for your thoughts.

EXTRA NEWS FROM VK6

Graham VK6RO has written to say he has progressed from VK6ZGS to VK6RO and has been having a thrilling time on 6 metres using an IC502 and 25 watt PA and 2 element quad, or mobile with the 502 and whip antenna. On 2 metres he uses an IC202 and 25 watt PA and 5 element yagi and is keenly interested in SSB contacts.

Graham has had a lot of satisfaction in working JAs, starting on 15-3 from home, then 17-3 whilst mobile with 3 watts, same on 18-3, 9-4 and 13-4, so five openings to JA, three worked whilst mobile. Thanks for writing from Bunbury, Graham.

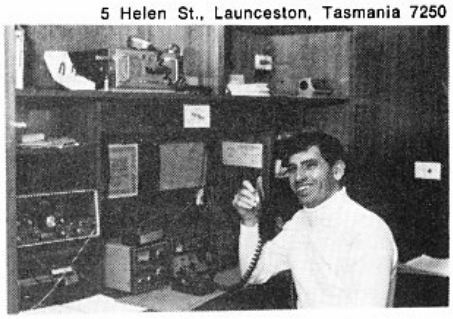
GENERAL NEWS

Winter conditions have not produced too much in the way of contacts on 6 or 2 metres of late. Some contacts from time to time on 144 MHz between VK5 and VK3. I took a look around the bands at the time of the VK2 VHF Mid-Winter Contest in July but didn't hear anything. I only came across the details by chance when I saw them published in ETI magazine, which seems to be restricting their coverage to some degree.

Whilst I do not dispute the value of a "State of the Art Contest" for what it means, I think the idea of totally excluding Es and usual tropospheric openings as a means of participation does tend to diminish interest in the contest. By all means foster "State of the Art" techniques, but it is better to increase the level of participation by amateurs by allowing the less exotic forms of propagation to be counted, even if not at the same points level. One never knows just what might be worked if sufficient stations are on the bands, but you have to get them there first for contacts to be made. So go to it, you purists, hammer me if you want to, but if such a contest is to really get off the ground, it needs to be well publicised, in

SPOTLIGHT ON SWLing

Robin Hawood VK7RH
5 Helen St., Launceston, Tasmania 7250



This month, we are considering the reception report. Most international broadcasters do welcome reports from listeners on propagation conditions and signal strength as well as co-channel interference. However, they are more interested in the feedback from their listeners with comments on the content of their programmes. They aim to reach a wider audience than the casual DXer and wish to promote interest on what is happening within their countries, as well as expressing their viewpoint on world events.

Getting QSLs from broadcasting stations is somewhat easier than amateur operators although they require different information to verify their transmissions. As they utilize many frequency bands often using channels simultaneously, they would welcome comparative reports to assist them to find the optimum frequency. They also prefer the use of another reception code than the RST system in amateur contacts. This is the SINPO code, see Fig. 1, sometimes abbreviated to Signal, Interference and Overall Merit. They require also about 15 to 30 minutes details of programme content (especially when verifying foreign language broadcasts where times are critical in checking reports).

SINPO CODE

	Strength	Interference	Noise	Propagation	Overall
5	Excellent	Nil	Nil	Nil	Excellent
4	Good	Slight	Slight	Slight	Very Good
3	Fair	Moderate	Moderate	Fair	Good
2	Poor	Strong	Strong	Severe	Fair
1	Barely Audible	Severe	Severe	Extreme	Poor

The SIO Code same as above but deletes N & P.

A sample reception is shown (Fig. 2) with the required details of date, time (in GMT), frequency, signal levels and programme content. Some broadcasters welcome reception summaries of transmissions over extended periods such as a week, monthly, or quarterly.

With regards to postage, many major international broadcasting organizations are directly funded or controlled by the national governments and sending IRCs is not necessary. Smaller broadcasting stations, however, have limited budgets, particularly in developing nations, and it is recommended to use IRCs with these statons. It is also advisable to check with the World Radio TV Handbook for their QSL policy.

Some broadcasters have altered their policy in that they will issue QSL or verification cards during certain periods only. All still welcome reception reports, especially comments on their programmes.

When submitting reports on foreign language broadcasts, it is recommended that a more detailed report on programme content be given in order that the station can verify that the programme heard could be one of theirs. With reports to Latin America stations, it assists if the report is not in English but in Spanish or Portuguese, if you want speedier QSLs. Also French stations prefer their reports to be in that language as I have known English language reports to be delayed or ignored.

Make your report neat, tidy and well laid out. This helps in getting that verification, especially from the rarer stations. Also include some details on your equipment, antenna and some information about yourself and your area.

Incidentally, with reports to American stations, write the date in words, for there the month is given before the date, for example 3/4/80 is the fourth of March and not the third of April as it would be here.

I would welcome your comments and suggestions on the content of this column. Until next month when we will discuss "clandestine" broadcasts, amongst other subjects, good DXing and 73s. ■

RECEPTION REPORT

Station:.....

Frequency:.....

Date:.....

Time: .....

SINPO Report:
Programme Information:
Additional comments:
73s from Rob L. Harwood

SDC ..... AndeX.....

Date:.....

---

plenty of time, and not be too restrictive in its applications. Now watch the flak!

As I said before, news is scarce, and as I am prevailing on the good auspices of the editor to print some maps for me this month, I had better close and leave enough space. But it will be September when you read this and here's hoping all the TEP hasn't gone yet. Thought for the month: "Putting pen to paper lights more fires than matches ever will."

73. The Voice in the Hills. ■

SMIRK

SMIRK stands for the Six Metre International Radio Klub. It numbers amongst the membership many of the keenest 6 metre DX operators. Its newsletter contains news of interest to all six metre operators.

To join SMIRK you must send log extracts detailing the required number of contacts with SMIRK members, together with a once only fee of $4 US to the Secretary, Ray Clark K5ZMS at 7158 Stone Fence Drive, San Antonio, Texas 78227.

The required number of contacts is six for the USA and for Foreign to Foreign, that's us, it is three. To assist in determining who amongst the JAs you have worked are SMIRK members there have been several lists published in AR from May 1979 to the present update.

To obtain the SMIRK newsletter which is full of news about six metre, openings, contacts, countries on six, DXpeditions, equipment, and lots more, SMIRK members send a supply of SASEs and $1 US approximately postage per issue to the Secretary. These envelopes should have your SMIRK number on them. This newsletter is published quarterly and is really good for keen six metre operators.

The list below is the latest listing update of recent Japanese and Australian SMIRK members.

JF1IXW 3556, JF1QOI 3555, JI1CWW 3614, JI1WEJ 3557, JK1AFU 3617, JK1BCK 3671, JK1DAT 3632, JK1DLR 3663, JK1QXF 3545, JK1PIV 3547, JL1GWL 3529, JE2AOQ 3619, JE2PWN 3546, JF2KOZ 3629, JR2BEF 3647, JA3PTY 3582, JF3LGC 3658, JF3MOK 3598, JF3MXU 3644, JF3RLG 3664, JF3RVF 3639, JF3SVD 3633, JF3TDC 3637, JF3WBD 3635, JG3IND 3638, JG3OEC 3640, JG3RGG 3641, JR3TVH 3533, JA4IQF 3558, JA4RCC 3559, JH4HTC 3560, JH4LSB 3645, JH4NHT 3536, JH4TIG 3561, JH4XIU 3562, JA5GAM 3602, JH5DDI 3616, JH5EJT 3615, JA6MXU 3597, JE6IHW 3618, JH7PAF 3537, JH7SSJ 3661, JH8NIJ 3625, JA9QAD 3665, JH0HQP 3554, VK3YII 3646, VK4YL 3670, VK4ZAY 3656, VK6ZBX 3627. ■

SUPPORT OUR ADVERTISERS

AWARDS

AUSTRALIAN VHF CENTURY CLUB AWARD

OBJECTS

1.1 This Award has been created in order to stimulate interest in the VHF bands in Australia, and to give successful applicants some tangible recognition of their achievements.

1.2 This Award, to be known as the "VHF Century Club Award", will be issued to any Australian Amateur who satisfies the following conditions.

1.3 Certificate of the Award will be issued to the applicants who show proof of having made one hundred contacts on the VHF bands, and will be endorsed as necessary for contacts made using only one type of emission.

REQUIREMENTS

2.1 Contacts must be made in the VHF Band (Band 8) which extends from 30 to 300 MHz, but such contacts must only be made in the authorised Amateur Bands in Band 8.

2.2 In the case of the authorised bands between 30 and 100 MHz, verifications are required from one hundred different stations, at least seventy of which must be Australian. The Amateur Bands 50 to 54 MHz and 56 to 60 MHz will be counted as one band for the purposes of the Award.

2.3 In the case of the authorised Amateur Band between 100 and 200 MHz, verification from one hundred different stations are required.

2.4 It is possible under these rules for one applicant to receive two certificates, one for each of the authorised Amateur Bands nominated in Rules 2.2 and 2.3.

2.5 The commencing date for the Award is 1st June, 1948. All contacts made on or after this date may be included.

OPERATION

3.1 All contacts must be two-way contacts on the same band, and crossband contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Fixed stations may contact portable/mobile stations and vice versa, but portable/mobile station applicants must make their contacts from within the same call area.

3.4 Applicants, when operating either portable/mobile or fixed, may contact the same station licensee, but may not include both contacts for the same type of endorsement.

3.5 Applicants may only count one contact for a station worked as a limited licensee with a Z or Y call sign who is subsequently contacted as a full AOCP holder.

3.6 All stations must be contacted from the same call area by the applicant (except as below), although if the applicant's call sign is subsequently changed, contacts will be allowed under the same call area.
If the applicant moves to another call area, contacts must be made from within a radius of 150 miles of the previous location to qualify for award purposes. If the distance of the new location from the old exceeds a radius of 150 miles, a separate application for a new award must be made claiming only contacts made from the new location.

3.7 All contacts must be made when operating in accordance with the Regulations laid down in the "Handbook for the Guidance of Operators of Amateur Wireless Stations" or its successor.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will be grounds for disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station worked, the date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the following details:

4.4.1 Applicant's name and call sign, and whether a member of the WIA or not.

4.4.2 Band for which application is made, and whether special endorsement is involved.

4.4.3 Where applicable, the date of change of call sign and previous call sign.

4.4.4 Details of each contact as required by Rule 4.3.

4.4.5 The applicant's location at the time of each contact if portable/mobile operation is involved.

4.4.6 Any relevant details of any contact about which some doubt might exist.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of a Division of the Wireless Institute of Australia, or two licensed amateurs known to the applicant, should accompany each application for membership or adjustment of verified country totals.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager of the Wireless Institute of Australia, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members of the Wireless Institute of Australia.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members of the VHFCC wishing to have their verified totals, over and above the one hundred necessary for membership, listed will notify these totals to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive of the WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary.

WORKED ALL STATES (AUSTRALIA) AWARD

OBJECTS

1.1 This Award has been created in order to stimulate interest in the VHF/UHF bands and is of a high standard to fully acclaim the proficiency of the recipients on their achievements.

1.2 This Award, to be known as the "Worked All States (Australia) Award", will be issued to any amateur in Australia or overseas who satisfies the conditions following.

1.3 A certificate of the Award will be issued to applicants who show proof of having made two-way contact with the specified areas of the Commonwealth of Australia. Additional credit will be given for proof of contact with overseas countries, viz., New Zealand or Papua New Guinea. Countries, for the purposes of this Award, are set out in the Australian DXCC Countries List.

REQUIREMENTS

2.1 Contacts must be made on the VHF/UHF bands 52 MHz and above (Bands 8 and 9). Contacts made on 50-52 MHz prior to 1/4/64 will count towards the 52 MHz Certificate.

2.2 One verification from each of the following areas of the Commonwealth of Australia is required —

(a) Australian Capital Territory.
(b) New South Wales.
(c) Victoria.
(d) Queensland.
(e) South Australia.
(f) Western Australia.
(g) Tasmania.
(h) Northern Territory.

In all, eight verifications are required.

2.3 It is possible under these rules for one applicant to receive one Award for each of the authorised bands between 30 and 3,000 MHz.

OPERATION

3.1 All contacts must be two-way contacts on the same band and crossband contacts will not be allowed.

3.2 Contacts may be made using any authorised type of emission for the band concerned.

3.3 Portable operation will be permitted provided that the portable location shall be in the State in which the licence was granted and in the call area in which the licence was granted in the case of overseas operation.

3.4 All contacts must be made in accordance with the Regulations laid down in the "Handbook for Operators of Radio Stations in the Amateur Service" or its successor for Australian stations, or in accordance with those Regulations applying in the country of the applicant in the case of overseas stations.

VERIFICATIONS

4.1 It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence showing that two-way contacts have taken place.

4.2 Each verification submitted must be exactly as received from the station contacted, and altered or forged verifications will lead to the disqualification of the applicant.

4.3 Each verification submitted must show the call sign of the station, date and time of contact, type of emission and frequency band used, the report and the location or address of the station at the time of contact.

4.4 A check list must accompany every application setting out the details for each claimed station in accordance with Rule 4.3. If any contacts were made whilst portable, this must be stated and the portable location given. The applicant must also state whether or not they are a member of the WIA.

4.5 In lieu of forwarding QSL cards or other written evidence as set out in Rules 4.1 to 4.4 above, a list giving the details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of an affiliated Society, or two licensed amateurs known to the applicant, should accompany each application.

APPLICATIONS

5.1 Applications for membership shall be addressed to the Federal Awards Manager of the WIA, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired.

5.2 A nominal charge of $1, which shall also be forwarded with the application, will be made for the issue of the certificate to successful applicants who are non-members.

5.3 Successful applicants will be listed periodically in "Amateur Radio". Members wishing to have their verified country totals listed over and above those submitted at the time of application for membership, will notify these details, in writing, to the Federal Awards Manager.

5.4 In all cases of dispute, the decision of the Federal Awards Manager and two officers of the Federal Executive WIA in the interpretation and application of these Rules shall be final and binding.

5.5 Notwithstanding anything to the contrary in these Rules, the Federal Council of the WIA reserves the right to amend them when necessary. ■

LISTENING AROUND

With Joe VK2NIM

Remember some of the blokes you worked in your CB days. Well, I do because if it wasn't for CB, I wouldn't be among the ranks of the amateurs now. Many ex CBers have now joined the amateur ranks and occasionally I meet somebody I have earlier met with on CB. For example, the other morning I spoke with a Novice in WA whom I had last contacted on 27 MHz in those hectic days when CB was at its height.

And I recall that CB has had some good points. I remember once talking with a CB operator in Mildura who was sitting up on top of a pole gathering money for the local hospital by seeing how long he could sit up there with his CB. I don't think he's yet migrated to the amateur ranks, but what a waste of talent if he hasn't. (He was a pretty cluey bloke — electronically speaking anyway).

And having spoken with a CBer atop a pole, the other morning I spoke to an amateur atop of an extension ladder. At least if he wasn't there, his helical antenna was! I'm referring to Ted VK1NAN, whose QTH was given as the Satellite Tracking Station at Orroral Valley, 35 miles south of Canberra. Ted says that VK1ZIF Ian, and VK1WM also Ian, are at the tracking station and there also is Lindsay, Joe and Bob, who one day hope to have their calls.

One of my regular 80 metre contacts is Jack ZL1LK, at Orewa near Auckland, in the North Island of New Zealand. Jack told me recently that a former neighbour of his, aged 80, who was once a wool classer, is now in Mildura and has spotted me eating at a local eaterie where I go for a midnight snack! So, Ted, I don't know you but if you spot me in that eaterie again, why not tap me on the back and say howdy. It would be nice to meet you — specially since you are a friend of ZL1LK.

In the early hours of the morning of the day in which I write this, I was in contact with Keith VK3NBA mobile, who was using a Kraco through a transverter to get him up on to 80, and can switch his Kraco from 27 MHz to 28 MHz when he wants to. It would be handy to still be able to monitor the emergency frequency 27.065 MHz even for little else.

Another very interesting contact in recent days was with Robert VK5NRN, located at Padthaway, 200 miles from Adelaide and 30 miles north of Naracoorte. He received his call on 21/6/80, and I happened to be his first VK2 and his fourth QSO in all! He was using a Johnston Viking converted to 28 MHz plus transverter which is owned by Rod VK5NRR. Robert is working among the grapes in his area in order to save up enough money to buy his own rig. Hope you will have got my card by this time, Robert, and it was nice to speak to you, as it always with any one of the friendly folk on the 80 metre band. Seems the CB and transverter combination is very popular!

Being located as I am, almost on the border of three different States with their multiplicity of different laws and regulations, I'm sometimes tempted to think of al tlhree as three separate countries instead of one Commonwealth of Australia. At least with Federation they abolished the customs duties between Victoria and NSW, and no longer is there a Forestry Inspector on duty near the ageing Mildura bridge (over the Murray) to check vehicles bringing timber from one State into another. And as for that Fruit Fly check-point — well it might as well not be there at all.

But all is not lost, and the marvellous thing about the wireless waves coming from my QTH is that they more than penetrate deep into the territory of all three States and beyond. I'm usually one of the first VK2s that most "Wassies" (VK6s to you) hear first, and I'm well within range of VK5s who sometimes can't hear any other VK2 east of the Blue Mountains.

Another regular contact on 80 is Hugh VK5NIO, who is very active constructing various items for his shack, his friends, or doing photography work. Then there's Geoff VK5NDZ, who makes violins in between having coffee and sandwiches, or checking the Adelaide radio shops for bargain radio gear. Kim VK5NKY from Reynella works for the Department of Environment, which is involved with trees and highways, mainly in the north Flinders Ranges. Kim says he loves his job and is lucky enough to enjoy the job he does for a living.

Does anyone know the original owner of my call sign VK2NIM? I believe he may be in the Gosford area of NSW. If he reads this, will he please contact me as I have a whole swag of QSL cards for you earned before the call was allotted to me. These cards were sent to me from the VK2 QSL Bureau, but are not for me.

I've had several QSOs with Stewart VK3AIA of Caulfield, who got his first class commercial licence (No. 68) in 1931. Stewart has seen 70 summers and comes up on an Old Timer's Net. With his son, he does PA work in a big way and this includes the Stawell Gift, when he camps out on the job, the Myer Music Bowl, the Melbourne Town Hall and OB work for a Melbourne ocmmercial radio station. His son, Hugh, has a degree in electronics. When Stewart talks about amplifiers and speakers it's really high powered stuff.

Well that's it for now and until next time I hope to work you on 80 or hear from you through the post! ■

QSP

EMDRC STATIONS

Looking through the May issue of the EMDRC Radio Bulletin, the statistics in their supplement call list was interesting as it could reflect the general trend of amateur clubs in Australia. The biggest number of members were listed as retired —12.2 per cent. As might be expected, students were 11.1 per cent and communications and electronics 10.9 per cent, engineering occupations came 7.5 per cent in the list, with business administration at 7.1 per cent, down to finance and accounting to 1.3 per cent. Of the 451 members, 78.5 per cent held licences plus 3.8 per cent as licensed juniors, 243 of those holding VK licences were also members of the Institute out of a 350 total, plus 16 out of the 101 others (all, except 8 overseas licences, being listeners) were also members. 70 per cent membership of the WIA must be a good record in anybody's book. ■

FORWARD BIAS

VK1 DIVISION

(Postal Address: WIA (ACT Division) Inc., PO Box 46, Canberra, 2600 ACT)

About 60 members, undeterred by winter cold, made it to the July meeting. The evening's topic was "Test Gear" and each speaker described and demonstrated his own particular item of equipment. There was a fair sampling of home-brewed items included in the range of gear set up for display and operation. It's reassuring somehow to see that the art of homebrew is still with us. VK1 Division's "parts box" was disposed of at long last. Auctioneer extraordinaire Bill VK1MX, after cataloguing something of the order of 100 assorted items in the box, responded to the sole bid offered and sold the lot in one hit — box and all!

Four new members joined us in July — Tony Knight VK1JA, Ian Coleman VK1NDI, A. Hanes VK1ZAZ and Peter Bowles VK2YPL. There were four new calls, too: Jack White VK1ZAD/3D2MW, Dave Gibbons VK1NDG, Barry Bennetts VK1NDO and Ken Pyett VK1NDK. Incidentally, Barry, an ex-SWL, was recently awarded the HAVKCA certificate. Strange that this award which has been around for some time now, seems to have attracted so few claimants. Barry's certificate is only the 50th issued so far. How about, SWLs? You may well have qualified for the "Heard All VK Call Areas "award. Why not drop a line to the Federal Awards Manager and ask for details — or give him details of your claim.

FEDERAL EXECUTIVE EDUCATIONAL GRANT

The committee has decided to use some of the (Dick Smith) grant money allocated to VK1 to purchase an overhead pro-

jector — something we've needed for a long time. We may also do something about our aged creaking duplicating machine — either a complete overhaul or a new machine.

NEW CALL SIGN FOR MELBA HIGH SCHOOL

David Boehm VK1UD has successfully applied for a curriculum development grant of approximately $780 to establish an amateur radio station at the Melba High School. Equipment on order is a TS-520SE transceiver and an 18-AVT/WB trapped vertical antenna, which should perform well on its 40m x 30m metal ground-plane provided by the school roof.

The call sign VK1MH was applied for in February in anticipation of the grant and sessions, already under way, take place during an activity hour on Wednesdays. Students with a general interest in radio attend these and have already spoken to amateurs in many parts of the world, including five other school stations.

At present, VK1MH is on air using David's FT-200 plus assorted end-fed wires scrounged from the science lab. Transmissions on 40 to 10 metres take place every Wednesday between 11.30 and 12.30 (AEST).

Students seriously interested in passing the Novice examination will be able to attend after-school instructional sessions, which will start in September, probably also on Wednesdays.

David will be happy to provide further information on VK1MH and anyone interested to hear more about this venture can contact David (QTHR) or on (062) 54 8982 AH.

CHANNEL 6 REPEATER NEWS

Several committee members made the ascent to the Black Hill site on Sunday, 20th July, and inspected the repeater facility there. VK1 has a rack-assembly in a building that houses equipment operated by NASA (associated with the Tidbinbilla tracking station).

On 27th July, Peter VK1DS and Neville VK1NE, heading a task-force comprising Les VK1ZKL/NBK, his son, Bert VK1ZAT, and Ara VK1BM (here in Canberra from JA), also tackled Black Hill. The antenna was inspected and refurbished, new coaxial was put in, and the old Mount Ginini repeater (once stolen, recovered and returned to VK1) was put into operation. Peter has asked for a two-week test period so that performance can be assessed.

Ara, who recorded some of these great moments in history on film, is now writing an article which will be published back home in Japan, where there are no repeaters.

Stopping off at the Cotter River, the stalwarts enjoyed a barbeque, hosted by Peter's XYL and family, including his mother-in-law who is on a visit from the UK. A productive and rewarding day.

TECHNICAL TOURS

This spring and early summer, the Division hopes to arrange visits or conducted tours for parties of WIA members to the Black Mountain Telecommunications Tower, local TV stations, the Tidbinbilla station, the RAN communications station at Harman (and perhaps the naval transmitters at Belconnen).

In arranging these visits, we want to avoid the well-trodden paths of the usual public tours; the Black Mountain tower for example, is open to the public, but its telecommunications facility is not normally accessible. The list is not exhaustive — other places of interest could include the Solar Physics laboratory at the ANU, certain Divisions of the CSIRO, and so on.

Interested members, planning to visit Canberra, or who may want to come specially to join any of the planned tours, will be most welcome. As the programme develops we'll publish more detailed information in this column. ■

QRK5

A transmission from the Victorian Division WIA.

Written and co-ordinated by VK3WW, QTHR.

This month's news and views have to be written before I see the first lot in print, so I have no idea of the acceptability or otherwise of the contents or format. Perhaps it serves as a good illustration of "lead time" delays.

WILLY WILLY'S WORDS

A term of endearment has crept into our vocabulary, which is sometimes misused through lack of understanding of its origin. The following historical facts will explain the origin of the term "half call'.

Names and call signs have been changed to protect the guilty.

Many years ago "Bill" VK3A? was busy preparing for the RD contest in which his friend VK3Z?? (Tom) always helped by keeping log.

Bill's XYL is talking to a neighbour.

Neighbour: "Bill looks busy."

XYL: "Yes, he wants everything ready before his ham friend Tom arrives to help him in the contest."

Neighbour: "If Tom's a ham too why doesn't he go in the contest by himself?"

XYL (full of technical knowledge): "Oh! he can't, he's only got half a licence."

Tom arrived as this last sentence was spoken. A generous application of 807 soothing fluid ensured that Tom still keeps log for Bill.

From this one innocent remark the term "half call" was born.

Please note that it applies to **Limited AOCP** holders only and has no mathematical origins or connotations. It does not follow that a **Novice AOCP** holder is a quarter call or a dual holder is a three-quarter call. The Novice licence was planned as a stepping stone to the AOCP, so if it needs a "jargon title" perhaps Temporary Call would be appropriate.

QUESTION TIME

Last issue I asked a couple of questions without giving answers. A couple of thugs decided to reply with the following:—

We were wondering whether Wee Willie's wonder would work well without wet winding wire wound within??

Is the answer in AR for February 1980?

PEOPLE AND TIME

Did you know that the monthly council meetings usually last until midnight — sometimes later — **no not waffle** — just the amount of business and the principle of giving every councillor a fair hearing. When you next feel like criticising the council think about "time".

The WIA Centre at 412 Brunswick Street, Fitzroy, is open five days a week, between 10 a.m. and 3 p.m. We all owe thanks to a willing band of experienced members who provide this service free of cost.

It is **people giving time** that keeps the WIA going — if you don't have the time available to help at least express appreciation to those who have and do.

MAJOR AIMS

Council would like to improve facilities available to members. The limiting factors are time and finance. Please let council know what you would like in the way of facilities; all ideas will be discussed. If no replies are received it means everyone is satisfied.(???)

MEET YOUR COUNCILLORS THIS MONTH — NOBODY!!!

All councillors were asked to supply your scribe with brief details for publication — none have after four or more weeks — so they must be shy or perhaps the extra five minutes demand on their time was just too much.

Yes, I will wear a bulletproof vest to the next council meeting!!

;Next month more news and an introduction to two well known operators.

Would all zone and club secretaries please submit copy for these notes to the AR Liaison Councillor, VK3WW, QTHR.

73. Mike. ■

YOU and DX

G. (Nick) Nichols VK6XI
6 Briar Place, Ferndale, WA 6155.

QSL cards, those colourful pieces of paper that adorn many a DXer's shack, cost at times large sums of money to obtain and often disappoint due to the failure of the donor to complete them correctly, are in the news again this month.

It seems that postal pixies in other countries are not only far less reliable than our own but even stoop to pilfering of mail articles either for the contents or at times just the postage stamps affixed thereto.

A51PN reports numerous such occurrences and specifically requests that money **NOT** be included with QSL requests, IRCs are apparently not so prone to this unwelcome attention but **5** are required for return airmail postage (and we complain about our postal rates); should you send IRCs to Bhutan, ensure that their date of issue is clearly shown, **pre-1980 frankings are not acceptable.**

9X5PP in Rwanda has been receiving many second requests for cards and believes his mail is also receiving rather dubious attention. If Peter has not responded to your QSL request I suggest you try again but avoid wherever possible including any mention of amateur radio on the envelope or attractive stamps; keep your direct QSL mail as plain and non-descript as possible and you will reap the returns.

Enough of the bad news. For those stations active DX-wise on RTTY, there will be some activity commencing 20th September from **3A2IP (10HUB** — whilst on holiday) on 20, 15 and 10 metres. Clay will also be operating SSB mostly on 10 looking toward VK for contacts. QSL via home call.

ON THE BANDS

160 Metres:

VS5 worked from **VK6.**

80 Metres:

Excellent conditions prevailing, good openings into Europe and for the Novices Africa worked again at around 22.30Z, both phone and CW at good strength.

40 Metres:

Patchy with some excellent propagation at times, **ZK2YY, A22DW** and numerous Ws on CW, together with **EA8AK, CE3JK** being the most notable.

20 Metres:

Good propagation to all areas, heavy QRM whenever anything a little out of the ordinary appears (and they do with regular monotony), most notable being **VK9CCT** (Cocos), **FB8ZO** (Amsterdam Island) CW, **HK0BKX** (San Andres) CW, **FO8GM, VK2GX** (Wallis).

15 Metres:

If the woodpecker would leave it in peace we could take advantage of the good propagation, excellent openings into Africa and Europe (long path). **7P8BJ, CR9A, XT2AW** are worth a particular mention.

10 Metres:

Despite predictions that the peak had been reached in cycle 21, a renewed upsurge in solar activity could possibly herald a "double peak" cycle as has occurred in the past. Don't write this band off just yet, conditions are certainly better than this time last year, so for those still chasing single band WAZ or DXCC the outlook remains bright.

On CW **A7XE, 5B4HF** and **CT2ON** have been making their presence felt whilst on phone. **VE6EP/4U** (YK Syria) has by now returned to Canada and will be sorely missed from the band. Also heard/worked during the month **YS9RYE, A7DX, HK0GY, NP4HW, 4B4MDX, OH2AP/OJ0, K5YY/KS6, TA1MB, ZK2YY, 6O0DX, 9Y4JW** and **9X5PP** (for those that need this one, Peter is active most Sundays from around 8.00Z around 28.585).

That's it for this month, now here are some QTHs you may have missed —

VK9CCT — via VK5QX
VS6IC — via K2MTC
A22DW — via VK7CH
5B4HF — via KC51
HK0BKX — via WB4QFH
3D6BQ — PO Box 14, Manzini, Swaziland
8Q7AV — Four Winds, Male, Maldive Islands
7P8BJ — Box 30, Maseru, Lesotho
E6EP/4U — via Home Call
K5YY/KS6 — via Home Call
TA1MB — via PO Box 1167, Istanbul, Turkey
FO8GM — via PO Box 3835, Papette, Tahiti
HS4AMI — via VE3DPB
FB8ZO — via F6EYB
CR9A — via WBZKXA
FR0FLO — Box 200, Tampon, Reunion
AP5HQ — via N0RR
3D2BM — Box 590, Suva, Fiji
5H3FW — via DF4TA
4B4MDX — via XE1OW
ZK2YY — via K5YY

Cycle 21 Peaks

On November 10th, 1979, the highest daily sunspot cycle 21 was recorded. The count was **302** and it dropped to **98** on the 29th. The monthly mean was **183.3.**

Recently the final numbers for 1979 were received and run as follows:

January 1979: 166.6; February: 137.5; March: 138.0; April: 101.5; May: 134.4; June: 149.5; July: 159.4; August: 142.2; September: 188.4; October: 186.2; November: 183.3; December: 176.3.

The yearly mean: **155.4.**

The running smoothed mean now looks like this at April 1980:

January 1979: 123.7; February: 130.9; March: 136.5; April: 141.2; May: 147.2; June: 153.0; July: 155.1; August: 155.8; October: 156.2; September: 158.7; October: 163.1.

Up to June 1979 are final, afterwards are provisional.

Provisional monthly means for 1980 are:

January 1980: 162.2; February: 159.3; March: 126.5; April: 166.6; May: 179.7.

The running smoothed number of 163.1 made cycle 21 higher than cycle 18 whose peak of 151.8 in May 1947 ranked it as No. 3 in cycles since 1755. The only other cycle to reach 150 since 1755 was cycle 3 with a maximum of 158.5 in 1778. So it looks like cycle 21 will enter the history books.

Historically, the highest daily sunspot number recorded was **355** on **December 24, 25, 1957,** and the highest monthly mean was **201.3** in **March 1958.** The highest recorded 10.7 cm (2800 MHz Radio Noise) solar flux was **457.9** on **April 7, 1947,** coinciding with the central meridian passage of the largest sunspot group recorded. Measuring some 5520 millionths (millionths of the sun's hemisphere).

The highest daily solar flux reading for cycle 21 was **383,** coinciding with the sunspot number of **302** on **November 10th, 1979.** At this stage there are no details of sunspot sizes for cycle 21.

Whilst the transition across the peak of the cycle has been in progress, the degree of geomagnetic activity has quietened considerably. Just the odd angry burst that pulls out propagation for a few days. Although there are areas of high activity on the sun, the recurring or rotational effects are not clearly showing yet. As the cycle starts to wind down then the greater bursts of geomagnetic activity will start to occur.

The period **September 1980 to May 1981** should be worth watching. I have observed that when activity is on the wane, some interesting propagation effects occur, specially so on VHF when the decline is interspersed with some vigorous magnetic activity. Late September from 20-26th and 18th-23rd October, with peaks in solar flux on 11th September and 8th October. Watch the down side of these peaks to 26th September and 23rd October will be the periods to observe.

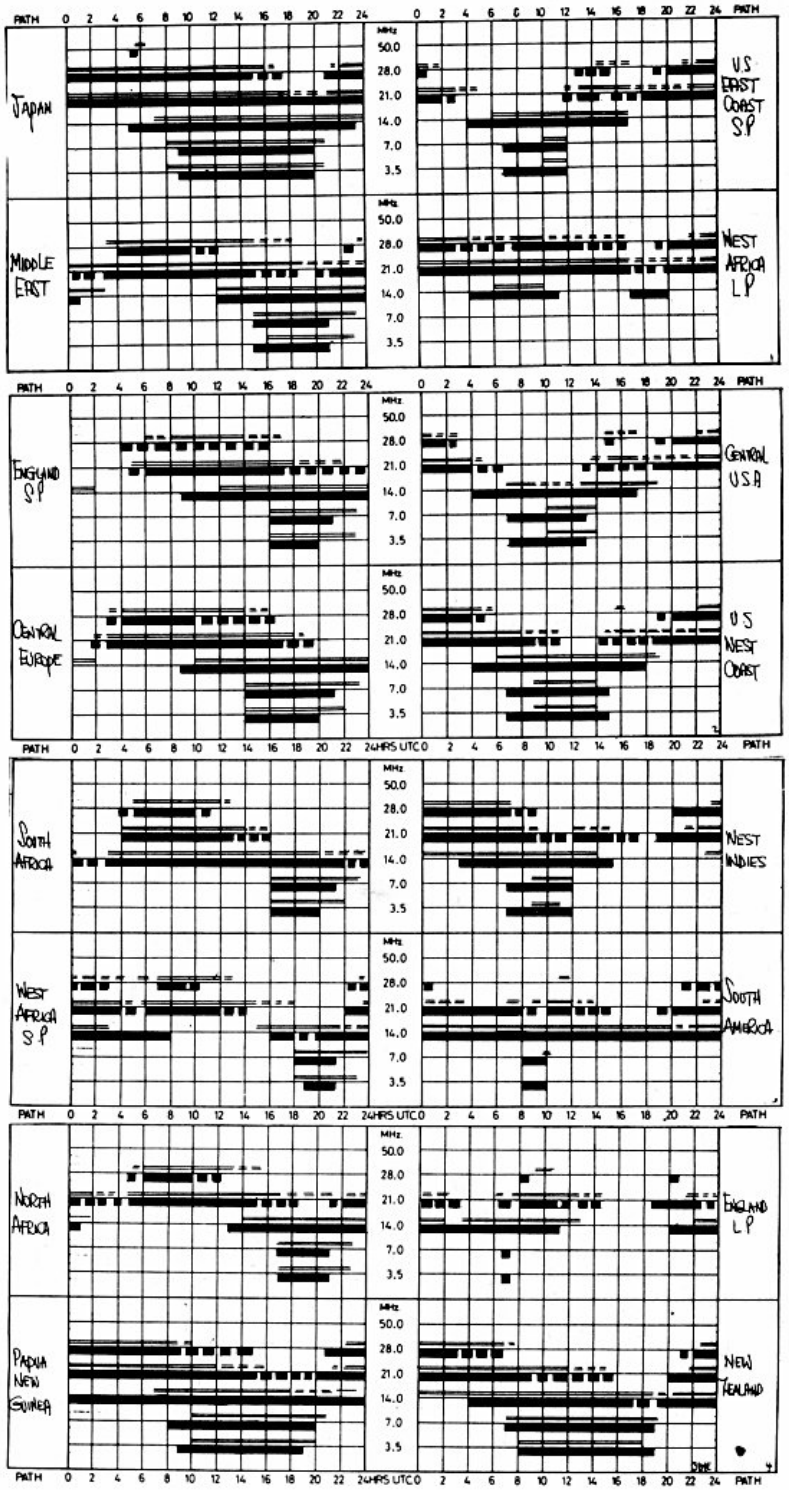
In July the solar flux peaked to **250,** dropping to **128** early in August. May peaked **275,** June peaked **251.** Each rotation appears to be weakening slightly and by the end of 1980 it should not peak over 200.

This drop will also affect the extremely long skip observed over the past 12 months. Some of the long path activity will diminish in 1981. Ah! well, we haven't done too badly in cycle 21 so far.

73 VK3BYE. ■

IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE



LEGEND

FROM WESTERN AUSTRALIA.

FROM EASTERN AUSTRALIA.

BETTER THAN 50% OF THE MONTH, BUT NOT EVERYDAY.

LESS THAN 50% OF THE MONTH.

PREDICTIONS COURTESY I.P.S. SYDNEY.

ALL TIMES UNIVERSAL UTC (GMT).

LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

EDITOR'S COMMENT
A HORNET'S NEST?
Sometimes a letter in this column sparks off a flood of replies from other members.

On this occasion a letter from Jack Mellor VK3AMG, published in the July issue, obviously has struck a nerve with some of our Novices.

Here are two of the replies received. I regret that the other letters received cannot be published due to space limitations.

At the time of printing, letters were also received from S. Lister VK3VSL, J. Thomas VK3NTR and R. McKibbin VK5NKO. All of these are commenting on the same theme as those published below.—VK3UV.

PO Box 664, Albany, WA 6330.
14-7-80.

The Editor,
Dear Sir,

I would like to express my appreciation for an enjoyable magazine and I look forward to each month's issue eagerly. There is, however, in the July issue a letter to the editor that I found to be disturbing and wish to reply to. I refer to Jack Mellor's (VK3AMG) letter regarding "limited tenure oftwo years" for novice operators.

It appears to me that Mr. Mellor's letter reeks of resentment from start to finish. His sarcastic remarks "having reached the dizzy heights of 5 w.p.m." and "that hard multiple choice paper", also the inference of running more power than legally permitted, I take exception to. The latter could be applied to full call too, however without concrete evidence of this happening, I feel the comment only further shows his resentment of the novice operator.

It would generally be agreed in this country as well as overseas, that the novice operator with his 30 watt PEP has been able to compete quite favourably with full call operators; not by running excessive power, but by plain ingenuity in building a better antennae system than Mr. Mellor has the capability to construct.

The exceptional results attained by the Australian novices and their antennae systems is world known. I personally spent six weeks working nights and weekends to build a tower to my own design that would withstand cyclonic winds if necessary. It holds two five element Yagis, one on 10 metres and one on 15 metres, with the latter having a 40 ft. boom, all of which is "home brew". I can also boast of having "knocked off" plenty of full calls in DX pile up because I did not rely on linear power to an average antennae with little directional ability. And that's how it is, Mr. Mellor, I'm just one of thousands of novices who could teach you how to get a good signal out without excessive power. I run a Kenwood TS180S with the finals removed and run off the 10 watt drive stage. I also run a Kenwood TS 120V with **equal** result. Frequently I have received up to 5-8 reports to Europe on both bands when the path is open and 5-9 +20 in VK regularly in good conditions. In concluding I'm quite happy as a novice and am in no hurry to move up to full call just yet.

Yours faithfully,
John Dowsett VK6NJD. ■

47 Russell Street, Avoca, 3467 Vic.
14th July, 1980.

The Editor,
Dear Sir,

I am a totally and permanently incapacitated repatriation pensioner member of the WIA with the novice call sign VK3NWV, which I have held since 10th January, 1979. I am 68 years "young" and now derive much pleasure participating in amateur radio activities in my retirement years, notwithstanding that my physical disabilities will positively prevent me from ever obtaining a "full call" AOCP licence. It has become patently obvious to me that amateur radio is more than just a hobby — it is a most friendly world-wide fraternity without equal in our modern day society and I am proud to be a member.

However, I am motivated to write this letter following on a letter in Amateur Radio, July issue, from one Jack Mellor VK3AMG, in which, apart from contemptuous aspersions he casts about novice licensees which I choose to ignore, he ventliates the question of tenure of novice licences, and I quote from his letter, ". . . is it possible to get the department to bring in limited tenure . . ." Te goes on to say, and I again quote from his letter, ". . . most full call blokes (self included) are appliance operators these days . . ."

This appears to suggest that not only should the novice licences be of limited tenure but possibly the full call operators should be required to periodically pass a full call examination and failing this, then sit for that "hard" multiple choice paper with "the dizzy heights of 5 w.p.m." to even retain a novice licence.

As this requires a statement of policy by the WIA I brought this matter up during the "call back" session of the WIA weekly broadcast on Sunday, 13th July, and hopefully look forward to a resolution therefrom.

In the meantime, may I suggest to Mr. Jack Mellor VK3AGM at Yarram, that if he does not like the company he meets on the bands and frequencies available to novice licensees — then the obvious thing to do is operate only on the extensive bands and frequencies NOT available to novice licensees — and if he can — then find operators to talk to who think like he does. I suggest he will be very lonely and I can only say how sorry I feel for him; but in my opinion his loss will be to the ultimate gain of the amateur radio fraternity.

Yours sincerely,
Alan Stubblety VK3NWV. ■

Salvado College, New Norcia 6509.
20th June, 1980.

The Editor,
Dear Sir,

With reference to the "Letter to the Editor" in Amateur Radio, June 1980, about the Maritime Distress, I feel I need to voice what needs to be brought to the attention of many people.

I am sorry to say, but the White Wave incident was a terrible example of emergency communication. There was far too much QRM from stations, either unaware of the situation or just too uncertain as what to do in the case of such an emergency.

It is obvious, and Mr. Ashton has made it quite clear in his article, that many maritime stations use amateur frequencies, many of them in the HF spectrum and that the need for a good clear net of emergency frequencies is more than obvious.

I feel, and I'm sure Dick like many other operators must, that something needs to be done about acquiring such a net frequency, if not one net per band, in the HF sector.

The bands most affected are the 15m and the 20m band. We have a responsible hobby so I ask all operators to take note of full emergency procedures and if anyone would like to talk about and expand the ideas of the emergency frequencies, I ask you to contact Richard Ashton, PO Box 11, Woomera, SA 5720 (SASE please), who is more than happy to oblige.

Vy 73 E. Greenfield VK6NIE. ■

The Editor,
Dear Sir,

The two-way SSB QSO on 3535 kHz was a deliberate effort to gain attention to the fact that the gentlemen's agreement for the most part is being observed but that many VK novice and full calls are operating on SSB below 3550 kHz.

The novice band plan lists 3535 up for SSB as per VK Call Book, page 24, so I was operating in accordance with the band plan proposed by the WIA, which is absolute rubbish and conflicts with international band plan of SSB above 3550 and CW only below this frequency.

AR might join us in publicising the gentlemen's agreement as used world-wide. (Some Region 1 areas prohibit SSB below 3600.)

With the decline in solar activity 80 metres will become alive with international DX, abuse of the 25 kHz DX window from 3525 to 3550 will prevent two-way contacts being made. The US general class will have similar restrictions to the VK novice, in that he is restricted to CW and to frequencies above 3525.

With the WIA CW broadcast on 3550 and allowing at least a 5 kHz guard band, this leaves a whole 20 kHz for all the VK novices to work USA on CW, not to mention the VK full calls and ZLs who need these contacts.

I hope my S9 plus SSB signal smack in the middle of the band illustrates what would happen if we complied with near-sighted locally produced WIA band plans?

I suggest the WIA rescind the 3535 up SSB allocation as set out in their DX band plan and support a CW only segment of 3525 to 3550 with SSB to start with a guard band above 3550 kHz.

P.S.: I broke in on the contact with VK2BKE and VK4NOI which had been going for over half an hour.

73 Steve Gregory VK3OT. ■

PO Box 59, Atherton, NQ 4883.
11th July, 1980.

The Editor,
Dear Sir,

It was a shock to me to read of Max Howden's passing. I met him for the first time in 1929, when on my way with Alf Traeger to Cloncurry to set up the first full time radio base for the AIM's Flying Doctor's radio base.

In those days he was the true pioneer of crystal cutting, which he devoted to a very high degree; also he did a lot of early experimental work in the VHF bands; always helpful to all who asked him; in latter years I lost track of him; there were a few occasions when we still talked over the air.

I have very vivid recollections of that first night we spent having dinner, where he insisted that I carve the joint??

To his family I wish to convey my deepest sympathy to this passing of a "grand old man and pioneer in radio", and trust that you will find space in the next issue of AR.

Very sincerely yours,

Harry C. Kinzbrunner VK4HK (originally VK5HK 1928). ■

25th June, 1980.

The Editor,
Dear Sir,

I am sending you herewith a copy of a letter I wrote to Colin Yates, the author of the "SPREADING" letter to the Editor in the June 1980 issue of AR.

The man is completely wrong, waves with big words of technically and scientifically justified checking methods, reducing the sensitivity of his receiver to a point where he can hardly hear anything at all. Please publish my letter to him, you probably will get more similar comments from others.

73 Arie Bles VK2AVA.

"Colin Yates VK2AGZ,
Charleston.

Arie Bles VK2AVA,
Springwood.
22nd June, 1980.

Dear Colin,

Belonging to the much outspoken 3695 kHz fraternity and aware of your communications with Bill Dukes VK2WD, myself having been involved in trying to convince Les VK5LC that he was always overdriving his equipment and spreading over more than his fair share of the frequency spectrum entitled to, I just have to write you about your "SPREADING" letter to the Editor in AR.

You should know me and my not entirely limited experience in amateur matters, having avail of more equipment than many others due to my position, it may be beyond reasonable doubt that if I feel I need to tell someone that he is spreading or having a broad signal, I do have the equipment to determine that and insight how to use it.

Although not yet possessing a spectrum analyser, am still trying to acquire one without having to spend a fortune on it, I can safely determine the width of signals I receive. Testing my monitoring on some of my own transmissions with various types of sets by loading them into dummy loads and with proper shielding able to observe fair and average strengths signals, I have proof that my methods of observation without claiming unspecified scientifically correct methods, you should specify what you mean by that, are showing results.

I can observe test transmissions that way that produce S-9 signals, far from overloading the receiving gear front ends, and ascertain that with good equipment and staying away from non-linear operations, I hear next to nothing on the opposite sideband, showing good desirable sideband rejection and no spurious transmissions. It is my habit to test any new gear that I procure this way and not all do pass these tests. Subsequently, if I receive an amateur's transmission on the air and know that the strength of reception is not such that front end overload on reception can occur, I should be able to expect that if on a clear part of the band, I should not hear much of his transmissions on the opposite sideband, leaving my receiver at full sensitivity, no nonsense with gain and AGC reduction and fiddling, that is a normal test. If I conclude that the transmission is a clean one with my fairly well trained hearing, I can expect that and can prove it time and again on such clean signals, VK6MK Tom Mulder using clean Collins equipment without overdriving or speech processing gives me the proof time and again. No need to tune away from his sideband, up in frequency if he is on USB, or changing sidebands **without** frequency change, impossible with YAESU MUSEN gear, but if done and assuring that the receiver is not front end overloaded, the transmission will not take up more than just 3 kHz USB and be next to inaudible on LSB.

73 Arie Bles. ■

22 Risely Avenue, Royal Park, SA 5014.
6th June, 1980.

The Editor,
Dear Sir,

May 1, through the columns of AR, ask the award committees of radio clubs to consider the VHF operator when formulating the rules for their awards?

It is easy to see why there is little interest in awards from those who, from choice or necessity, operate VHF, when some of the rules extend to outright discrimination! The type to which I refer are those requiring a contact with a club station which has no equipment for operating VHF.

I realise that it is hard to make the rules perfectly equal for everyone, but it is obvious that many award committees do not appreciate the problems of the VHF operator. I have found, on writing to various clubs, that there is little willingness to understand. The standard answer is that those are the rules, if you don't like them it is bad luck, but the rules cannot be modified. I must point out that not all clubs are so bad, but even they won't consider any modifications to the rules. One club in northern Queensland requires six contacts, one being the club station. So far I have eleven contacts, but have not worked the club station, so I have not qualified for the award!

The "Elizabeth Award" (Elizabeth, SA) would be a good example of suitable rules. It requires eight points. The club station is worth two points, members are worth one point on HF, or two points on VHF.

I realise that some awards will not fit in with my suggestions, such as the "Australian Commonwealth Electorates" Award, but those are long term projects anyway. The basic award can be obtained with a little effort, even if the final stage cannot. As evidence, I have my ACE award endorsed for fifty electorates, and need only one more for the seventy-five endorsement. I doubt that I shall ever achieve the full one hundred and twenty-five on six metres, but I shall enjoy trying.

In closing, I would ask that award committees spare a thought for the VHF operator. The best way would probably be to have a keen VHF DXer on the committee. I am not asking that the awards be made too easy, just that it should be possible to get them.

Yours faithfully,
R. W. Pitcher VK5ZGZ. ■

JOIN
WICEN
WIRELESS INSTITUTE CIVIL EMERGENCY NETWORK
providing a pool of trained, licensed operators, with equipment, available for deployment to aid communications in an emergency.

WICEN

R. G. HENDERSON,
Federal WICEN Co-ordinator,
171 Kingsford Smith Drive,
Melba, A.C.T. 2615.

CHANGE OF ADDRESS

Readers are advised of a change of address and telephone number for the Federal WICEN Co-ordinator. The new address is:

171 Kingsford Smith Drive, Melba, ACT 2615.

Home telephone (062) 58 7904.

THE FUTURE OF WICEN

In my report to the last Federal Convention and in a Federal tape recently I made mention of the future of WICEN. Nowadays most of our potential clients have communications networks capable of providing a service equal to our repeater VHF systems. However they do have problems in attracting trained operators, and users skilled in getting the most out of such systems, particularly when emergencies strike. Loss of mains power, or Telecom bearers, floods or fires are examples of these circumstances and it is then that the trained WICEN amateur can contribute, with advice, and with his back-up VHF systems. We achieve a great degree of flexibility because we can operate independent of mains power and in field or makeshift situations.

I also said that such requests for assistance will invariably come after the emergency has arisen and often after existing services have collapsed or are nearing that state. Hence we must be ever prepared for the emergency that only rarely happens. The challenge then is to keep up the interest of members in these circumstances, by exercises both in civic aid circumstances and in local SES situations.

JOTA

The Jamboree of the Air (JOTA) affords WICEN groups an opportunity to practice their field deployments. Why not get your WICEN group to support a local Scout group by setting up a field or portable station? It will allow you to check your equipment load lists, field antennas and power supplies (KVAs). Can you move into a site and be on the air in less than an hour? Treat it as a test and a challenge. ■

The Intruder Watch

Some edited thoughts from correspondence with our Intruder Watch personality, K6KA, by Alf VK3LC.

The following treatise is a resume of thoughts as gleaned over the years from our contemporary in the USA, Bill K6KA.

He says — "In summarising Intruder Watch reports we find that Finland is number one in volume of reports, followed by the USA (about five times as many as the next), then Switzerland, Britain, New Zealand, West Germany, Barbados and Australia, followed by five other countries with less than 40 reports monthly. The total result is a very respectable world-wide coverage, capable of solving many Intruder problems . . .

"Results in eliminating intruders tends to concentrate on those countries with adequate Government Monitoring Systems, and willingness to follow International procedures for reporting intruders to the source countries, which encourage Intruder Watch International networks weekly to get support from the countries most able or willing to confirm the monitoring, and take diplomatic action or action supported by ITU methods. In addition, some Intruder Watchers have a demonstrated ability to locate unofficial channels to reach someone at the intruding stations to obtain improvement in equipment to eliminate the reported problem . . .

"Often people think that spurious emissions are temporary and not worth the trouble, but experience proves otherwise. Some have as many as 25 In-band spurious signals which is a really important interference problem. Once K6KA counted 80 per cent of USSR source, 10 per cent from the People's Republic of Red China and the other 10 per cent widely and thinly distributed for a very wide range of causes or reasons."

To digress from K6KA's dialogue, the following account may interest readers: In June ZL1BAD, our New Zealand Co-ordinator, reported a very strong spurious signal on 14120 kHz signing "AXM32/34/37", a RTTY and facsimile signal. AXM is located in Canberra, so on being alerted we immediately got in touch with the PTD here in Melbourne and reported the phenomena. A few days later a telephone call was received by our Administrative Secretary from a high official at PTD to the effect that the spuriuos had been traced and eliminated. Now ZL1BAD reports that the signal on 14120 kHz is no longer there.

To continue with K6KA's remarks — "Radio communications weekly have proved very helpful, often curing problems or locating them, then finding a solution. VK3LC/ZL1BAD/K6KA schedules started some 10 years ago, VK3LC/G5XB possibly three years. One item reported in Australia got attention, and Voice of America located the trouble and corrected it within several weeks, without any official Government involvement, and there are many other similar cases . . .

"In the USSR I found on several trips that documents and correspondence in general never reached the intended engineer, though certain individuals were permitted to go to engineering libraries. I feel that USSR violations are largely due to the fact that **nobody** knows about treaties, and **nobody** has any orders to comply with such. For instance, for decades USSR has been using the audio from the Regional MAYAK second programme of Radio Moscow modulated up to about 500 per cent to blot out any Russian language from any Chenese station. One country's monitoring system thought they coulde embarrass the USSR by suggesting that there was a spurious being received. The USSR reply was 'We did not have any transmitter on that frequency at that time'. Oh yeah? With DF now down to a fraction of a degree error, and multiple stations confirming the fix, it is not very likely that the objecting country had spotted the source of QRM in the **wrong** country!"

And so goes on K6KA's dialogue, very interesting and thought provoking. The Intruder Watch does very important work, as you can see. Would you like to join the few dedicated amateurs doing that work? Our Federal Co-ordinator and Divisional Co-ordinators would like to hear from you. An IW sked is kept every Thursday evening at 1030Z (8.30 EAST) on 3540 kHz, why not join us? See you there!

ALF CHANDLER VK3LC,
Region 3 IC Co-ordinator
■

ALARA

AUSTRALIAN LADIES' AMATEUR RADIO ASSOCIATION

NEWS FROM VK YL
CAMEO OF JOAN VK3BJB

Last month, while on a business trip to Mildura, I had the good fortune to meet Joan VK3BJB. Early one morning Joan whisked me away from the hotel, gave me a tour of the Mildura district, and invited me into her home. I must say that the tales of country hospitality are true.

Joan is a busy woman with two children and husband to care for. Her interest in radio began just prior to 1971 when OM Ray decided he wanted to get his licence. They studied together, although Joan had no intention of sitting for the exam until the last moment. "It was the furthest thing from my mind," she said, while reflecting on those days. At that time, there were only three or four amateurs in the area ,so most of their knowledge was gleaned from textbooks. The CW was easier because they received help by practising with an amateur who worked at the airport. In 1971 they received their tickets and Joan became the first YL outside the metropolitan district with a full call.

Many aspects of amateur radio interest Joan. She takes part in contests and has a fair number of awards to her credit, e.g. from the US, New Zealand, Venezuela, and American Samoa. Joan also operates QRPp with 1 to 2 watts output.

Working DX, however, is her favourite. "I would like to retire and work DX all day," mused Joan. She prefers two or three long chats to several short QSOs. Because she operates regularly on particular frequencies, she has gotten to know other amateurs quite well. Look for Joan during the day at 28.47 MHz.

One time she was not able to go on air for a stretch of three weeks. As a result, she received phone calls from amateurs overseas who inquired about her health. She even received birthday greetings from an amateur in Japan whom she had contacted many times. Although the man asked only for Mrs. Joan, the operator was able to place the call due to the household's history of overseas phone calls.

The activity which occupies her time, and Ray's, the most is the building of a new shack/workshop. It has two large rooms with good lighting and power points installed at workbench level. The antenna, a TH6DXX, is nearby on a new tower. The entire complex will be ideal when completed.

ALARA's Victorian Division has applied for and received a club licence with the call **VK3BWV (Beautiful Women of Victoria).** The call will be used to help novices with their operating procedures and to participate in fox hunts and other contests.

Maggie VK3NQQ is the first YL to become a member of the VK CW QRPp Club.

The first ALARA award has been posted to **Diana G4EZI.** Diana's enthusiasm in amateur radio is becoming well known. She is the creator of YL Activity Day.

Austine VK3YL is the first VK recipient of the award. She was feted last June by the WIA for her 50 years in amateur radio. Congratulations, Austine!

YLs interested in radio are welcome to join ALARA. For information, please contact **Daurel VK3ANL, Box 110, Blackburn, Victoria 3130.** ■

AWARDS COLUMN

Bill Verrall VK5WV
7 Lilac Avenue, Flinders Park, SA 5025

Here is a list of WIA Awards issued during the period 1st January, 1980, to 30th June, 1980, and the top DXCC tallies, new members and amendments at 30th June, 1980.

WAVKCA AWARD

Cert. No.	Call Sign	Cert. No.	Call Sign
790	JA2LFG	828	K6SMF
791	JH3KAI	829	JA4FCC
792	JA7GLB	830	JH1LBR
793	JA2WGD	831	I1HAG
794	JH1IFS	832	JA4GXS
795	CO2OM	833	JL1BDI
796	SM5BBC	834	JE1BDC
797	JH6VLL	835	JA7DOT
798	JJ1HKQ	836	JR3RLJ
799	JA6AS	837	JA9FAI
800	JA7BAL	838	JE2KUC
801	LA7AH	839	JE2GTZ
802	PA0JFH	840	JR1FCT
803	DM2CDL	841	PA0PCA
804	JA7RPC	842	JA7AXB
805	JA4AEZ	843	JA6GWU
806	JA7EPO	844	JR6RRD
807	G8PX	845	JE2ARR
808	LA7JO	846	IV3YRN
809	G2AMV	847	UK0LAK
810	JF3LBD	848	JA1UZQ
811	JA9AQE	849	P29GC
812	JH7FNM	850	JA3EUB
813	JH3JEX	851	JH7OSR
814	PA0KB	852	VE6CKW
815	UA9AAX	853	DM3EA
816	UA0OV	854	9M2RR
817	UR2QD	855	HM1QD
818	UO5PK	856	VE6CJO

819	UD6HB	857	ZL2BDF
820	UK7LAH	858	K5OGX
821	UA9MS	859	SV1EX
822	UW3IN	860	JA7FLI
823	UP2BCS	861	JA2NKL
824	JA3OCD	862	ZL2AUP
825	JA4BBN	863	W8QBA
826	JA2AE	864	WD8EMI
827	JA7ZF		

WAS (VHF) AWARD

Cert. No.	Call Sign
128 (amendment)	VK3AWY plus 9 additional countries
132	JA2DDN

NOTE

I congratulate "Hiddy" JA2DDN on obtaining this very difficult award for an overseas operator. He submitted QSL cards for 6 metre contacts with the following Australian operators: VK1RK, VK2YDY, VK3OT, VK4ADA, VK5LP, VK6BV, VK7ZAH and VK8AZ.

VHFCC AWARD

Cert. No.	Call Sign
103 (144 MHz)	VK4ZEZ
104 (144 MHz)	VK3ZYN

HAVKCA (SWL) AWARD

Cert. No.	Call Sign
46	VK3-13062, Maurie Batt
47	ZL2211, B. S. Stupples
48	L50405, Charles Branch

DXCC — TOP LISTINGS

PHONE

VK6RU	318/362	3JF	297/308
6MS	318/359	7DK	295/309
4KS	317/348	AHO	294/326
6MK	313/349	3AMK	294/302
5AB	308/338	2APK	293/313
4FJ	307/343	4UC	293/306
6LK	303/316	4PX	291/306
7LZ	299/315	5WV	289/300
4VC	299/309	3AKK	287/288
4RF	298/307	4AK	282/290

CW

VK2EO	309/346	6RU	258/297
2QL	306/344	3RJ	251/277
3YL	303/334	3TL	241/260
4FJ	302/344	3KS	235/254
3AHQ	299/331	3JF	214/228
2APK	283/304	7LZ	207/237
3YD	281/313	4DO	204/228
4RF	274/294	5RX	202/231
3XB	272/300	4SD	186/206
3NC	261/297	4UC	171/178

OPEN

VK6RU	318/362	4PX	298/317
4KS	317/352	4UC	296/310
4SD	317/348	7DK	296/310
3YL	314/345	3AHO	294/326
4FJ	313/356	3AMK	294/302
6MK	313/349	2SG	293/311
4RF	306/329	4AK	282/291
3JF	306/325	2AHH	279/305
7LZ	301/332	4DP	279/287
2APK	301/329	3XB	278/306

DXCC — NEW MEMBERS

PHONE

Cert. No.	Call Sign	Tally
205	VK6NEP	138/139
206	VK2VAB	154/155
207	VK3NLS	116/117
208	VK3NNR	111/112
209	VK3VDP	107/108
210	VK3NNY	157/158
211	VK2VAO	160/161
212	VK3NOA	106/107
213	VK7AE	275/276
214	VK4BG	232/242
215	VK6PS	115/116
216	VK6PY	103
217	VK3AWY	157/158
218	VK4AOK	115/116
219	VK3BLN	103/104
220	VK2VC	104/105
221	VK6NAT	101
222	VK6NEY	101
223	VK3NOL	128/129
224	VK3VGD	104/105
225	VK1NAV	103
226	VK6RG	101/102
227	VK4NVW	106
228	VK4DP	255/260
229	VK3NSY	100
230	VK1JN	103
231	VK2NRT	99/100

CW

106	VK3BMJ	105
107	VK7RO	103/104
108	VK7BC	114/115
109	VK3NNY	112/113
110	VK6IE	100
111	VK4DP	167/173

OPEN

178	VK3VDP	109/110
179	VK3NNY	200/201
180	VK3NOA	109/110
181	VK3YF	96/101
182	VK6PS	116/117
183	VK6PY	143/145
184	VK5NKP	100
185	VK3BLN	105/106
186	VK7DK	296/310
187	VK4DP	279/287

DXCC COUNTRIES CONFIRMED ON RTTY

VK5RY — Tally 75, VK5WV — Tally 35.

DXCC AMENDMENTS

PHONE

VK2FD	151/152	3NDY	205/206
2AHH	271/293	4BG	232/242
2NQL	145/146	4SD	132/143
3DS	152/158	4AWR	152/153
3DU	224/225	5XN	271/284
3GB	201/219	5OU	205/206
3OT	264/265	6FS	259/260
3RF	233/235	6HE	281/284
3ABH	252/253	6YL	206
3AHG	129/132	7BC	257/259
3BRM	201/202		

CW

VK3ABH	136/142	6PY	112/114
4KS	127/128		

OPEN

VK2NOG	121/122	4BG	247/260
3ABH	260/266	7BC	275/278
3NDY	208/209		

The item which appeared on page 16 of May 1980 AR under the heading "QSP" is worth a comment. The small number of VKs appearing in the ARRL DXCC listings over 300 confirmed does not surprise me because many operators, including myself, are just not interested for many and varied reasons. Perhaps if the ARRL nominated a check point within VK for processing of QSL cards (as is the case for all "CQ" awards), there would be more interest from VKs.

We now have a situation where, unfortunately, direct QSLing is the accepted practice to obtain QSL cards from rare overseas countries. If you tally up the cost of a card, envelopes, IRCs, postage, etc., you will find that each direct QSL received represents an investment of approximately $2. I am not prepared to risk this kind of investment in the overseas postal system.

On the other hand, there are some VKs who are not interested in any DXCC listings. I personally know two VK5s who each have over 300 countries confirmed who are not and do not intend to apply for membership of any DXCC award.

Good hunting. ■

CONTESTS

Wally Watkins VK2DEW
Box 1065, Orange 2800

September:

7	LZ DX CONTEST CW ONLY
13/14	2nd IARU INTERNATIONAL 10 METRES CONTEST
13/14	EUROPEAN PHONE CONTEST
20/21	22nd SCANDINAVIAN CW CONTEST
27/28	22nd SCANDINAVIAN PHONE CONTEST
27/28	AUSTRALIAN NOVICE CONTEST
27/28	ITALIAN YLRC "ELLETTRA MARCONI"

October:

4/5	VK/ZL/OCEANIA PHONE CONTEST
11/12	VK/ZL/OCEANIA CW CONTEST
18/19	CARTG RTTY*
18/19	JAMBOREE ON THE AIR
25/26	CQ WW DX PHONE CONTEST

November:

1/2	I DIPLOMA "GRAN CANARIA PERLA DEL ATLANTICO"
8/9	EUROPEAN RTTY*
8/9	INTERNATIONAL POLICE CONTEST
9	CZECHOSLOVAKIAN CONTEST
29/30	CQ WW DX CW CONTEST

December/January:

6 December to 11 January 1981 ROSS HULL MEMORIAL CONTEST (VHF ONLY)

* Rules for these contests from VK2SG or VK2EG QTHR SASE PSE.

BOQUET — 21st SCANDINAVIAN ACTIVITY CONTEST:

Plaque winner — OCEANIA, CW — **VK4QK**, Phone — **VK4QK.**

CONTEST CHAMPION TROPHY 1979 — FIRST AWARD

Winner with 28 points — **VK3XB.**
Second with 24 points — **VK3AEW.**
Third with 20 points — **VK5QX.**

The 1980 contest champion trophy will be decided on these contests:

1980 John Moyle Memorial Field Day.
1980 VK/ZL Oceania Contest.
1980 Australian Novice Contest.
1980/81 Ross Hull Memorial Contest.

This is an individual effort and can only be won by a member of the Wireless Institute of Australia.

SCANDINAVIAN ACTIVITY CONTEST 1980
GENERAL RULES FOR NON-SCANDINAVIANS

1. OBJECT

To encourage activity on the part of Scandinavian and non-Scandinavian amateurs to work each other and to promote communication skills between amateur stations world-wide. For the purpose of the contest, non-Scandinavian stations will try to work as many Scandinavian stations as possible.

Scandinavian stations are defined by prefixes as follows: LA/LB/LG/LJ (Norway), JW (Svalbard and Bear Is.), JX (Jan Mayen), OF/OG/OH/OI (Finland), OH0 (Alan Is.), OJ0 (Market Reef), OX (Greenland), DY (Faeroe Is.), OZ (Denmark), SJ/SK/SL/SM (Sweden) and TF (Iceland). Not all of these prefixes are geographically located in Scandinavia, but are considered Scandinavian for the purpose of this contest.

2. DATES AND CONTEST PERIOD

CW: Third full weekend in September. PHONE: Fourth full weekend in September. Starts 1500 UTC Saturday and ends 1800 UTC Sunday.

3. CONTEST CALL

CQ SAC on CW and CQ SCANDINAVIA on PHONE.

4. BANDS

3.5, 7, 14, 21, 28 MHz may be used, but only within the following sub-bands:

CW

3505-3575, 7005-7040, 14010-14075, 21010-21120, 28010-28125.

PHONE

3600-3650, 3700-3790, 7050-7100, 14150-14300, 21200-21350, 28400-28700.

Region 2 and 3 stations may also transmit on their frequencies above 3795 and 7100.

5. CATEGORIES

(a) Single Op./Single Tx — all band only.
Single Operator: One person performs all operating, logging and spotting functions. The use of spotting nets or any other form of alerting assistance is not allowed in this category.

(b) Multi-Op./Single Tx — all band only.
Only one signal allowed at any one time on any band. The station must remain on the band for at least 10 minutes following initial transmission on that band after band change.

(c) Multi-Op./Multi-Tx.
No limit to transmitters, but only one signal per band allowed.
CLUB STATIONS may work only Multi/Single or Multi/Multi.

6. STATION DEFINITION
All transmitters and all receivers, including spotting equipment for a station using one and the same call sign must be located within a 160 metre/500 feet radius.

7. CONTEST EXCHANGE
Consists of RS(T) plus a serial number, starting from 001, e.g. (59(9)001. QSOs after 99 are numbered 1000, 1001, etc. Multi-Op/Multi-Tx stations use separate serial numbers, starting from 001 on each band.

The same station may be worked once on each band. Only CW-CW and PHON-PHONE QSOs are valid.

8. QSO POINTS
Two-way QSO with sent and received exchange counts for QSO points.

European stations credit their logs with one (1) point for every Scandinavian QSO on any band.

Non-European stations (DX) credit their logs with one (1) point for every complete Scandinavian QSO on 14, 21 and 28 MHz and with three (3) points for such contacts on 3.5 and 7 MHz.

9. MULTIPLIERS
Two-way QSO is valid for multiplier credit if complete contest exchange is sent and at least RS(T) is received.

Worked Scandinavian CALL AREAS may be claimed for multiplier credit (LA1 equals LB1 equals LJ1 and SM3 equals SK3 equals SL3, etc.). Portable stations without district number count for the 10th call area, e.g. W4XXX/OZ counts for OZ0 and G3XYZ/LA counts for LA0. OH0 and OJ0 are separate call areas. SJ9 counts for the 9th call area in Sweden.

Each multiplier shall not be credited more than once per band. If serial number is not received, QSO counts for zero (0) points.

10. SCORING
Multiply all QSO points by the sum of all multipliers worked on each band.

11. LOG INSTRUCTIONS
Signed original logs (or copies of original logs) must be submitted separately for CW and PHONE. Logs to be filled out in the following order: date and time (UTC), station worked, sent and received exchange, band, multipliers (e.g. OZ4, SM3, OH0, etc.) and points.

SUMMARY SHEET
All entrants must submit a summary sheet showing station call sign, category, name of operator(s) and address. Indicate number of QSOs per band less duplicates, number of multipliers per band, QSO points per band and final score.

MULTIPLIER SHEET
All entrants must submit a multiplier sheet for each band with more than 200 QSOs.

DUPLICATE QSO SHEET
Possible duplicate QSOs must be shown in the log and counted for zero (0) points. Each entrant shall submit a duplicate QSO sheet for each band with more than 200 QSOs. Duplicate sheet to contain worked stations listed, e.g. by DXCC countries and call areas.

12. DEADLINE
Logs and accompanying sheets, addressed to: SSA Contest Manager, Peter Arninge SM0GMZ, Igeldammsgatan 18, S-112 49 Stockholm, Sweden, shall be mailed no later than October 15, 1980.

13. CERTIFICATES AND PLAQUES
Top scorer in each country as well as in each US call district, in each category both on CW and PHONE, will receive a Contest Award, provided a reasonable score is made. Depending on the number of entrants from each country, the award of additional certificates will be considered by the Contest Committee.

Top scoring Single Op. stations in each continent will receive a Contest Plaque both on CW and PHONE, providing a reasonable score is made.

14. DISQUALIFICATION AND SCORE REDUCTION
Violation of Amateur Radio regulations applicable in the country of the contestant or of the rules of this Contest, unsportsmanlike conduct and the taking of credit for unverifiable QSOs or multipliers may lead to disqualification. A log showing more than one (1) per cent unremoved duplicate QSOs results in unconditional disqualification. Each unremoved duplicate QSO found by the Contest Committee results in a penalty of five (5) QSOs of the same value as the duplicate.

15. COMPLIANCE WITH RULES
By submitting a Contest log, the entrant agrees to abide by the rules of the Scandinavian Activity Contest and by the decisions of the Contest Committee.

The Committee's decisions are final and definite.

Next year's Contest will be arranged by NRRL, the Norwegian Radio Relay League. ■

RESULTS OF THE 1979-80 ROSS HULL MEMORIAL CONTEST

Outright winner of the trophy is Ray Naughton VK3ATN.

SECTION (A) TRANSMITTING PHONE

Call Sign	7 Day	48 Hour
VK2BYX	1244†	604
VK2YHU	720	316†
VK2BQN	578	284
VK2HZ	602	246
VK2YEP	238	80
VK3ATN	3320	1402
VK3YLD	1214	392†
VK3AUI	900	383
VK4DO	2242†	768
VK4ZNG	1719	724†
VK4ZTV	595	262
VK4ZCO	264	84
VK5LP	944†	442
VK6OX	422†	152

† After a score denotes a certificate winner. ■

DIVISIONAL NOTES

VK3

The Eastern Zone held their annual general meeting on 30th June, with a very pleasing attendance of over 40. The office-bearers for 1980-81 are:—

President: M. McDonald VK3ZQV.
Vice-President: E. Allchin VK3BOO.
Secretary/Treasurer: L. Mair VK3BSM.
Repeater Officer: M. McDonald VK3ZQV.
Publicity Officer: K. Feltham VK3ANY.

VK4

At the Campbell Miles Festival in Mount Isa on the 21st of June, 1980, the Mount Isa and District Amateur Radio Group participated for the first time this year by setting up a display of radio gear and a working station. Many contacts were made in Australia and overseas, and the display seemed to create quite a bit of interest with the general public.

The photograph shows four of our active amateurs, from left to right, Jim VK4NVR, Richard VK4NOD, Denis VK4ACE, and Roger VK4ARZ. George VK4NTL/ZTM was the man behind the camera.

The display was a successful group effort involving amateurs from Mary Kathleen and Mount Isa, and it was a good advertisement for amateur radio, perhaps correcting some of the misconceptions people seem to have about our hobby. We have already booked space for next year's Festival, and look forward to an excellent effort. ■

AROUND THE TRADE

NEW TEN-TEC DISTRIBUTOR
The Scalar Group have moved into the amateur equipment field, having been appointed as the sole Australian agents for Ten-Tec Incorporated. Their products are advertised in this magazine.

One other interesting line is the WA2ZOT "Interfilter". This low pass filter was designed by WA2ZOT because he was tired of ingress of moisture and dust into the normal filters made in "mini boxes". So he set about making a sealed unit that stays "new" inside indefinately.

It will take all the power his rig can deliver (3600W) PEP — that's 1800 watts RF key down.

Performance was so good it was decided to produce the unit with the following specifications:—

Pass band 0-30 MHz.
2000 watts PEP.
Insertion loss 0.4 dB.
TVI rejection 70 dB.

There is a guarantee for the lifetime for the original purchaser of the WA2ZOT "Interfilter".

The unit is available through the offices of Scalar Melbourne, Sydney and Brisbane. ■

SILENT KEYS

It is with deep regret that we record the passing of —

Dr. R. L. SMITH-ROSE, CBE
Ex Pres. RSGB (also CCIR)

Dr. J. A. SAXTON
Ex Pres. RSGB (also CCIR)

Mr. G. J. LEE	VK2AFL
Mr. O. E. BLYTH	VK3XW
Mr. G. SUTHERLAND	VK3VW
Mr. H. R. BROWN	VK3NN
Mr. E. J. KERKIN	VK2KL
Mr. R. D. MURRAY	VK2AAI
Mr. H. J. HATHRILL	VK2AQK
Mr. E. C. CHAMPION	VK2AVC
Mr. G. M. BOWEN	VK5CXU
Mr. R. H. LINDSAY	VK5NRZ
Mr. A. A. CHEETHAM	VK2ADB

OBITUARY

TOMMY LAW VK4FW

It's just a little over a year ago since I attended a wedding on Tamborine Mountain — about ten miles inland from the Queensland's Gold Coast.

I was taking photographs of the happy newly-wed couple, when a lady came up to me and asked me if I would take a nice picture of her son . . . Tommy. She pointed him out to me . . . a good looking lad of about fifteen, "but," she said, "don't let him know that I asked you." So diplomatically I asked him to sit down and at the same time noticed that he was walking with the aid of a stick. I couldn't quite understand why such a young chap as this had to be using a stick . . . I soon found out, he had cancer of the pelvis.

Tommy, apart from all his other interests, had a great desire to know more about radio, he had been buying books on the subject, and was beginning to talk very knowledgeably on transistors, antennas and the thousand and one items necessary in radio. I liked Tommy from the word go, and although there was a little difference in our ages that didn't really matter — I'm 63 years old — we gradually became very firm friends. Tommy told me that he would really like to obtain a ham licence but he hadn't any knowledge of the morse code. I knew that wouldn't hold any traumas for him, so we were soon into the mysteries of the morse code, and before many weeks were passed he was comfortably reading the required five words per minute for the Novice ticket, but Tommy being Tommy said he wasn't interested in just getting a Novice licence — he wanted the Full. So with a few heartaches and lots of enthusiasm, we plodded on until he had reached a comfortable twelve words per minute. His theory and regulations were no problem . . . so he applied to sit for his Full licence. The licensing authorities were really great, although Tommy couldn't by this time make the journey into Brisbane, an examining officer went out to Tommy's home to conduct the examination . . . and on the 3rd January, 1980, Tommy was presented with the call VK4FW . . . and what a proud Tommy that was. I arrived home from the office to be given a message that Tommy would call me on CW 14050 MHz at 1745. And sure enough dead on the dot . . . VK4ACU de VK4FW hw? — K, in perfect morse. That must have been one of Tommy's proudest moments, and it certainly was one of mine. He had been given the call sign at 1015 in the morning and waited until 1745, so that I would be his first QSO. His grandma had bought him his full outfit, a TS820S, VFO, ATU, P/S and key, as well as a five band vertical antenna.

Dear Tommy made not more than twenty QSOs, as soon after gaining his full licence he was unable to leave his bed. He passed away on the 27th March — just a little over three months after becoming VK4FW.

He said to me once "Ray, you keep telling people that I'm fifteen . . . and I'm sixteen now."

Bless you Tommy.

Ray Robinson VK4ACU
Magnetic Drive, Eagle Heights, Q. 4271

OBITUARY

Mr. O. E. BLYTH VK3XW

Oscar Blyth VK3XW. Passed away peacefully 13th July, 1980, at his home in Beaumaris, Victoria.

Oscar was born in Tasmania, came to Melbourne in 1929, joined the Melbourne "Herald" newspaper, and stayed with them until his retirement six years ago.

He received his AOCP in 1936 and was a member of the Victorian Railway Institute, VK3RI.

Oscar joined the RAAF reserve shortly after it started, and was called up for full time duty at the outbreak of World War 2. After a sojourn at Laverton he was posted to New Guinea, where he served as Signals WO at Milne Bay. Here he contracted malaria and a kidney complaint, which was his eventual downfall.

Oscar had been a member of the WIA for 45 years. He obtained a commercial operator's certificate and taught wireless to commercial operators at the Marconi School of Wireless.

Oscar will be sadly missed by his many friends.

Alf Chandler VK3LC.

OBITUARY

H. R. BROWN VK3NN

We regret to announce the death of Mr. Herb Brown of Yanac. Herb had been interested in radio since 1923, when he built his first receiver, and became licensed in 1926.

Together with VK3HL (late Allan Hutchings) and VK3RH (Ivan Hodder), he operated an amateur radio station at Nhill during the East-West Air Race held in 1929. This venture was an outstanding success and they were thanked by the organiser of the air race, Captain Guy Moore.

Very interested in higher frequencies, he pioneered many 2m contacts and worked VK5 with regular skeds over a number of years.

When TV came on the scene, together with his son, Gary VK3BBL, he built a TV set with excellent results.

A keen member of WIA, he was President of a number of occasions of our zone.

Not only did he excell in radio but his home farm and grazing properties were a credit to him.

To his sons, Gary and Max, their respective families, and also Mrs. Olney, his sister, who is a keen listener on the ham bands, we offer our condolences.

Bill VK3AKW.

TRADE HAMADS

For a very long time commercial advertising has not been accepted in AR Hamads, but as the result of discussions at the 1978 Federal Convention a decision was made to open up a "Hamads-Trade" section. The rate will be $10 for 4 lines plus $2 per line (or part thereof), minimum charge $10, prepayable. Copy is required by the first day of the month preceding publication. This will mean that in future ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

HAMADS

- Eight lines free to all WIA members. $9 per 3 cm for non-members.
- Copy in typescript please or in block letters to P.O. Box 150, Toorak, Vic. 3142.
- Repeats may be charged at full rates.
- Closing date: 1st day of the month preceding publication. Cancellations received after about 12th of the month cannot be processed.
- QTHR means address is correct as set out in the WIA 1979 Call Book.

FOR SALE

Yaesu FT7 HF Txcvr., little use, in original carton, etc., $400; FL110 HF linear, $165; FT75B HF txcvr., AC and DC power supplies, SWR bridge and antenna tuner, $300; Koyokuto 2m FM txcvr., FM144-10SXT, fully synthesised, $200; Kenwood hand-held KP202, incl. nicads and charger, $125; miniscope soldering iron, $5. VK2AOE, QTHR. Ph. (03) 449 6364.

Linear Amplifier, five band, pair 4CX250B tubes in class ABI, fully metered solid const., large free standing unit on castors. VK6EZ, QTHR. Ph. (09) 444 0397.

Yaesu FT101B Txcvr., with G3LLL RF clipper, external VXO, SWR meter, mic., manuals and spare valves, perfect working order, $550. Ray VK3RF. Ph. (03) 878 5305.

Uniden 2020 TXVR Mark II (grey case) with separate VFO and Uniden speaker, CW filter, mic., 12V lead, 12/240V supply, as new, original box, $600; ICOM 211 2m txcvr. TXVR all mode, 12/240V supply, immaculate, $575. John VK2BYK. Ph. (047) 21 4205 Bus., (047) 21 2822 AH.

A weekend of Amateur Radio with all the usual convention events, plus a few unique ideas for only $5 registration. Come along and enjoy the hospitality of the west at the 28th annual SWARS Convention on the 25th and 26th of October, 1980, at Griffith. Details and programmes from the Secretary, Griffith Radio Club, PO Box 4, Griffith 2680. John VK2DFC.

Estate Late VK2AFL: Txcvr., Kenwood TS520S, complete, near new, $450; txcvr., Swan 7 meg. mobile, MB40A, comp. with whip, $200; rcvr., Lafayette, ham bands, HA800B, new, unused, $200; SWR meter, Oskerblok, as new, $50; SWR meter, Sansui, as new, $25; antenna, Hustler trap vert., with 30 mtr. RG8, $75; antenna, dual yagi, 10m and 6m, with mast and 30 mtr. RG58, 50; quad centre spider, cast lum., new, $15; plus copious "throwins". VK2CE, QTHR. Ph. (02) 871 7758 or 871 3094.

Kenwood KP202, leather case, nicads and charger, repeaters 2, 4, 6, 8 and simplex 40 and 50, $150; Eddystone EC10 comm. Rx., 550 kHz to 30 MHz, AC or battery, plus WIA 2m pre-amp. and converter, $120; set of 20, 40 and 80m helical mobile whips with mount and balun, $40; ETI induction balance metal detector, $40; EA auto-keyer, $20; No. 10 crystal calibrator, $15; audio compressor (ham radio), $15; ultra bal. 2 kW 1 : 1 balun, $10. VK3AHG, QTHR. Ph. (03) 288 2024.

Power Supply, 13.8V at 5A continuous; this power supply has excellent regulation and ripple characteristics and is ideal for FT7 or similar txr., can be easily converted to 8A continuous by the addition of one transistor, $39. VK1NAI, QTHR. Ph. (062) 88 2430.

Yaesu FT101E, 160-10m, latest model, modified for novice use, in excellent cond., complete with AC and DC power cords, mic., manual, and a spare set of valves, sell for $650. Contact John Brereton VK5NHB, QTHR.

CPI FC-70 seven-digit digital frequency counter, 30 kHz to 30 MHz, suitable for novice use, $80. Les Thurbon VK1ZKL/NBK, QTHR. Ph. (062) 88 9226.

Belcom 70 cm Multi-mode Txcvr., LS 707, 430-440 MHz, continuous (VFO) with xtal cal. 10W USB, LSB, FM, CW, AM, includes pre-amp. 1.8 dB NF and 40W linear (prototype), $600; Kenwood TR 7010 2m SSB Txcvr., $150. VK2YEV, QTHR. Ph. (049) 49 7546. Can deliver 150 km.

Antenna Mast, triangular cross-section of approx. 8 in. centres, uprights of 1 in. heavy pipe and trussed with 5/8 in. solid rod, five lengths of 6 ft. bolt together to give a total height of 30 ft., sections are galvanized, factory produced — not home-made, the lot $90, ONO. Will deliver Melbourne suburbs if necessary. Graeme Brownrigg VK3CCG. Ph. (03) 368 2369 Bus.

Yaesu FC301 antenna tuner, mint cond., with hand book, $185; Telonic SM2000 professional sweep generator, c/w markers, LH I plug-in for 0-12 MHz, SH I plug-in for 0-460 MHz, accessory detector and hand book, in excellent cond., ideal for aligning RX bandwidths, cavities or as a straight signal generator with accurate step attenuators, etc., $350; Marconi circuit magnification meter, measures precise values of Q, L and C over the frequency range of 15 to 180 MHz, price $125; Teletype mod. ASR38, full ASCII machine, tractor feed, factory fitted tape punch and reader, WRU, break, duplex and RS232 interface, was recently reconditioned and in very good cond., price $500; "Rotron" twin squirrel cage blower motor, suit high power linear, very good cond., $30; high tension transformer, 3 secondary windings, 500-0-500, 750-0-750 and 1100-1100V AC, estimated at 500 mA continuous, 45. Contact Ian Foster VK3ST. Ph. (051) 52 4027.

2m FM 23 ch., fitted with rpt. 1, 2, 3, 4, 5, 6, 7, 8, 10, simplex 40, 50, 51, only 2 yrs. old, Yaesu FT223, $200 firm; 2m SSB Txcvr., Belcome liner 2, ex. cond., $200 firm. Steve VK2ZSC. Ph. (02) 674 2104 after 5.30 p.m.

Yaesu FT200/FP200 Txcvr. plus P/S, includes FT200 club manual, 2 new 7360 bal. mod. valves, good cond., this unit in use at present time, $350. Grant Berkeley VK2AXB, QTHR. Ph. (02) 456 1519 AH.

Multi-Palm II 2m Hand-held Txcvr., xtals for rpts. 3, 4, 5, 6 and simplex 40 and 50, nicad charger and DC leaders, good cond., $175, ONO. VK2YFI. Ph. (02) 636 9753.

Linear Amplifier Yaesu FL-2100B, 10-80m, uses two limac 572Bs, maximum legal power all HF bands, with overlap for new bands, 1.3 kilowatt input, as new, used only few hours, purchased March 1980, with manual, etc., $395, sacrifice, John L20252, QTHR. 40 Grosvenor Street, Bondi Junction 2022, NSW. Ph. (02) 389 6455 Bus.

FRG-7000 0.25 kHz-30 MHz Yaesu Rx digital display, both local and GMT 24 hr clocks, $500, ONO, or will swap for Yaesu 101E or B Tx. Peter Dean L60036, QTHR. Ph. (09) 328 8147 AH.

Amateur Radio complete for the years 1957-present, prefer not to separate, offers. VK5BI, QTHR. Ph. (086) 45 6140 Bus., (086) 45 0023 AH, (086) 29 2076 weekends.

10m Universe, 15 watt PEP, 12V DC, 24 ch., 28.480-28.595, SSB, mint cond., $80. VK2CI, QTHR. Ph. (049) 66 2231.

FT901DM Yaesu HF Txcvr, with CW, AM filters, mic., brand new (unopened carton), $975; Alpha 374AE HF 1-30 MHz linear amplifier with automatic or manual tune, two Eimac 8874 tubes, maximum legal power plus, $2,095. James. Ph. (02) 36 7756 or (02) 799 5566. GPO, Box 5076, Sydney, NSW 2001.

FT200 and home-brew power supply, $270 or near offer. VK2ABI, QTHR. Ph. (042) 84 3772.

SR C6500 Standard Rx, perfect cond., complete with book and original carton, 6 monthse old, $280, ONO. L31280. Ph. (053) 39 5759.

Icom IC280 remotable FM Tcvr., 2m mobile, will sell for $375, due to change of QTH and circumstances. Bob VK6ZKL, c/- PO Bakers Hill 6562. Ph. (096) 24 2251 2200-2300Z or (09) 326 1494 0200-0500Z.

Yaesu Linear FLDX2000, new tubes, good working order, $200, ONO. VK2AHM, QTHR. Ph. (050) 27 3331.

Collins S Line, 75S-3, 32S-1, 30LI linear with 572B finals, 516F-2PS plus speaker, spare tubes 572B and 6146, $1480. VK1BH. Ph. (062) 65 5385 Bus., (062) 88 6062 AH.

Marconi CR100 60 kHz to 30 MHz AM/SSB Rx, $250, ONO; frequency metre, type BC-221-Q, $70, ONO. Peter Dean L60036, QTHR. Ph. (09) 381 4859.

Drake MN200 ATU with built-in SWR/watt meter, to 200W, as new, $225; regulated PS 13.5V 3 amp., $25; B & K precision 30 MHz freq. counter, as new, $100; Realistic DX160 comm. Rx, very good, $150. VK3PR, QTHR. Ph. (056) 62 2711.

FT101E, latest model, never been on air, as new, in manufacturer's carton, $700, ONO. Jack Mellor VK3AMG, QTHR. Ph. (051) 83 2370 AH.

IC502 6m Txcvr., complete with nicad batts and in-built charger, also a 30W linear, as new, complete with original packing and manual, $225; 1 x QQE 03/10, 1 x 3/12, 6 x 3/20 and 2 x 6/40, offers; STC model 121 car phone, converted to 6m FM, $20; Hygain 215B 15 element 2m beam, 28 ft. boom, 17.8 dB gain, $45. Colin VK3ZD, QTHR. Ph. (03) 876 1987.

IC551, new and unpacked, VOX, passband tuning, processor, $700; FT620B, used only three times, mint cond., calibrator board, complete all crystals and boxes, $450; must sell. VK7NAB. Ph. (003) 31 7914, Launceston.

Yaesu FL110 Linear, solid state 100W o/p., $200; Atlas PS110H 13.8V power supply, $100; Kenwood KP12 RF speech processor and Yaesu YD844 desk mic., $130. VK4HE, QTHR. Ph. (079) 27 6922 Bus., (079) 39 1307 AH.

90 ft. Free Standing KVC Southern Cross Tower, dismantled into 10 ft. sections for transporation, no rust, would suit commercial applications, $1700. Write to I. Buchanan, 11 Shore St., Moruya 2537.

Yaesu FTDX401, exc. cond., performance and appearance, with speaker and mic., $450. Bill VK2NJK, QTHR. Ph. (02) 632 3027.

AR240 2m synthesised, hand-held, as new, similar to Icom IC2A, 2 watts out, 144-148 MHz, supplied with AC and DC chargers, helical antenna, soft case, leather belt holster, owner's manual and workshop manual, the lot for $260, ONO. Ray VK1ZJR/4, 1 Heather St., Silkstone, Qld. 4304. Ph. (07) 33 7338 Bus.

Yaesu FT200 with power supply/speaker, DC converter, plus extras, $435; Kenwood TS120S, as new $595; PS30 supply, $125; XCR-30 Barlow Wadley Rx, $175, or consider offers. Ph. (03) 435 4336 AH only.

On behalf of deceased estate, brand new (never used) Yaesu FT101 Txcvr., complete with mic. and fan and handbook; also three morse code flight training cassettes, plus key, tenders for any item to Ross Delon VK5AG, QTHR.

Cybernet SSB CB converted to 10m, 40 channels 28.24-28.68 with 5 kHz shift and slide, $135; also transverter, 10-80m, compact case, $90; both units work well. VK5NTF, QTHR. Ph. (088) 63 1268.

ADVERTISERS' INDEX

The Advertisers in "Amateur Radio" support the WIA member — give them first preference — and tell them so, too!

FT200 Txcvr., complete with mic., AC power supply/LS, 12V DC power supply (DC 200) and manual, exc. cond., $420. VK1BE, QTHR. Ph. (062) 81 3301.

FT7B Yaesu Txcvr., rarely been used, mint cond., 10-70m, $520 firm; also FT101E in above cond., later model, $680. John VK3VCZ, QTHR. Ph. (054) 84 1777 after 5.30 p.m.

Drake Trcvr. TR-4C, 30 watts PEP SSB, 260 watts CW, 260 watts PEP AM 10-80m USB/LSB, with AC-4 power supply, MS-4 speaker, 34-UNB noise blanker and handbook, hardly used, $650. Ken VK6ZA, QTHR. Supply phone number for quick reply.

Electronic Keyer, Katsumi EK105A, 5-50 w.p.m., 240V AC, g.c., $30; Dick Smith freq. counter, as new, to 200 MHz, $90; 2m 5 el. quad, built as per RSGB VHF-UHF manual, works well, $25; Ken KP202 hand-held 2m txcvr., ch. 40, 50, rptrs. 2, 4, 5, 8, also xtals for rptrs. 6, 7, nicads, charger, leather case, stubby helical and collapsible ¼ wave whip, g.c., $140. B. Bathols VK3UV, QTHR. Ph. (03) 90 6424 AH.

Deceased Estate: Eddystone 840C Rx, general coverage, $200; quantity of WW II gear, suit spare parts, incl. AT5, AR8, quantity of magazines, QST, 73, CQ, what offers? Large quantity of valves. Alf VK3LC, QTHR. Ph. (03) 99 5344.

Drake C-line, complete, T4XC and R4C, power supply, speaker, c/w crystals, noise blanker, 15 receive crystals, power meter, bargain $1000, no offers; Swan linear 1200-X, $200, NF; Drake TR3 with power supply, $200, NF; dummy load Cantenna with transformer, oil, $50; shack clear out morse keys, inductances, condensers, etc. Alick VK2EF, QTHR. Ph. (02) 918 0526.

WANTED

ICOM RH2 or RM3 with or without ICOM 701, any cond.; Kenwood 599TX to suit 599DRX, also 2m and 6m converter units for 599DRX, any cond. John VK2BYK. Ph. (047) 21 4205 Bus., (047) 21 2822 AH.

Drake R4C Receiver in good working cond., also must have the noise blanker, instruction manual and accessories. Contact me on reasonable price please. Mr. David Deerman, 222 Parry St., Charleville, Q 4470. Ph. 278.

Borrow or photostat Galaxy 3 Power Supply Circuit, pay all exs. VK2QC, QTHR.

IC22A Hand Mic., must be in good cond. Ring Errol VK3GG, QTHR. Ph. (03) 370 3258 Bus., (03) 337 8094 AH.

Information on converting 40 ch. Pace 100m sidetalk (PLL circuit), from 11m to 10m. G. Franklin VK3VLJ, PO Box 24, Thornbury 3071.

Command Receivers (BC-453, 190-550 kHz and BC-454, 3.0-6.0 MHz), preferably unmodified. Ken VK6ZA, QTHR. Supply phone number for quick reply.

FT-7, will trade FRG-7 and make up difference. Contact Max VK3VSM, 19A Mason St., Regent 3073. Ph. next door (03) 470 1256 between 4-7 p.m.

Used but Working General Coverage Receiver for young lad following in father's footsteps. Contact Laurie VK2AQW. Ph. (02) 436 2766 Bus., (02) 962 2160 A.H.

Any information please circuits or manuals for the following items: (1) Phillips sig. gen. type TA101C (or A), RAAF ident. Y10S/60034, S/N 3059; (2) electronic voltohmyst 24/AWA/A56010, S/N 245; (3) radio Rx Tx RT176A/PRC10, S/N 54 (6m FM); (4) Admiral Corporation amplifier PS AM-598/u, S/N 144, Radio Corporation of America (matches item 3). Details to VK6ZKL, C/- PO Bakers Hill, WA 6562. Ph. (096) 24 2251.

Tri-band Antenna TH3 or similar and rotator. Ph. (053) 42 2245. Maurie Batt, RSD Rokewood Junction, Victoria 3351.

A pair of v/cond. ABT 250 MMFD, suitable for an ATU, to handle 150 watts. VK3YW, QTHR. Ph. (055) 62 7496.

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Amidon Cores — Iron-powder and ferrite, enlarged range available for tuned/wideband and supression applications in Rcvrs./Trans., large SASE for data/price list. Closed for business during November. RJ & US Imports, Box 157, Mortdale, NSW 2223.

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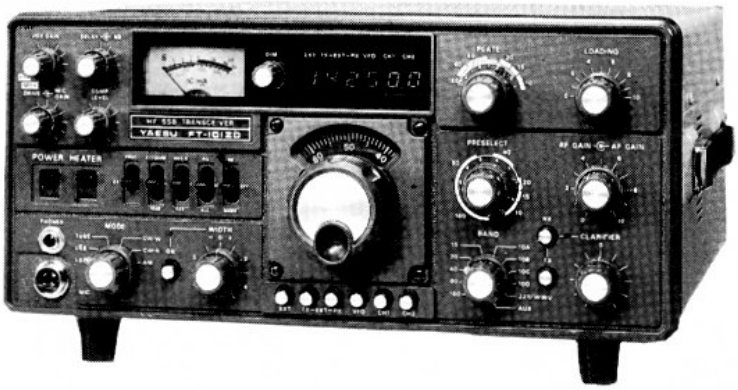
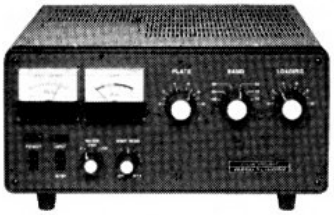




FL-2100Z LINEAR AMPLIFIER
The FL-2100Z is a compact, high-performance linear amplifier designed expressly for the FT-101ZD transceiver. This amplifier uses two rugged 572B/T160 transmitting triodes in a class AB_2 grounded grid configuration. Operation on the 160 through 10 meter bands is provided.

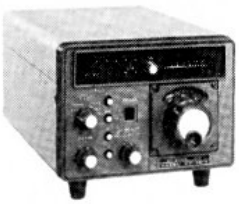
FTV-901R
VHF/UHF/OSCAR TRANSVERTER
In another industry first, YAESU brings you a three-band VHF/UHF transverter for your FT-101ZD station. The basic unit comes equipped with 144 MHz capability, and you may add our plug-in modules for 50 or 430 MHz as options. Repeater offset is provided for 6 and 2 meters, and full duplex operation on OSCAR models A/B/J is possible with an external receiver.

FV-901DM
SYNTHESIZED, SCANNING EXTERNAL VFO
The FV-901DM provides scanning and memory capability for your FT-101ZD transceiver. Using PLL synthesis in 100 Hz steps, the FV-901DM features an auto scan mode, which will search the band until it finds a signal-perfect for watching for openings. The manual scanner will scan at one of three rates, while you just flick a switch. The FV-901DM cannot be used with the analog FT-101Z.

Forty frequencies may be stored into memory, for control of the transmit, receive, or transceive frequency. And a clarifier allows fine tuning between the 100 Hz steps, as well as tracking of a drifting memorized signal. In DX or contest situations, you'll be seconds ahead of the competition with the FV-901DM . . . another YAESU "first."

FC-901 ANTENNA COUPLER
The FC-901 is a compact, efficient antenna tuner. The FC-901 features an in-line wattmeter, SWR meter, and provision for selection of three coax-fed antennas and one single wire antenna. Present a 50 ohm load for your FT-101ZD all across the band with the FC-901 antenna coupler.

YO-901 MULTISCOPE
Unsurpassed monitoring capability is yours with the YO-901 Multiscope. Featuring a high-performance oscilloscope, useful for countless station adjustments, the YO-901 also includes a two-tone generator, as well as an optional band scope for instant determination of band conditions and activity. Narrow-band IF signal observation is not possible with the FT-101ZD and YO-901.



FV-101Z EXTERNAL VFO
The FV-101Z is a compact remote VFO for your FT-101ZD station. The analog frequency display is geared to a precision tuning mechanism, resulting in silky-smooth operation. Clarifiers for the transmit, receive, or transceive frequency are included, while a unique VFO Shift feature allows ±8 kHz shift from the main dial frequency, allowing you to check nearby frequencies for a clear spot. Up to six crystal-controlled channels may be installed.

For further details and coloured brochures, call or write to Bail Electronic Services, Australian Agents for YAESU since 1963.

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DB10-15A

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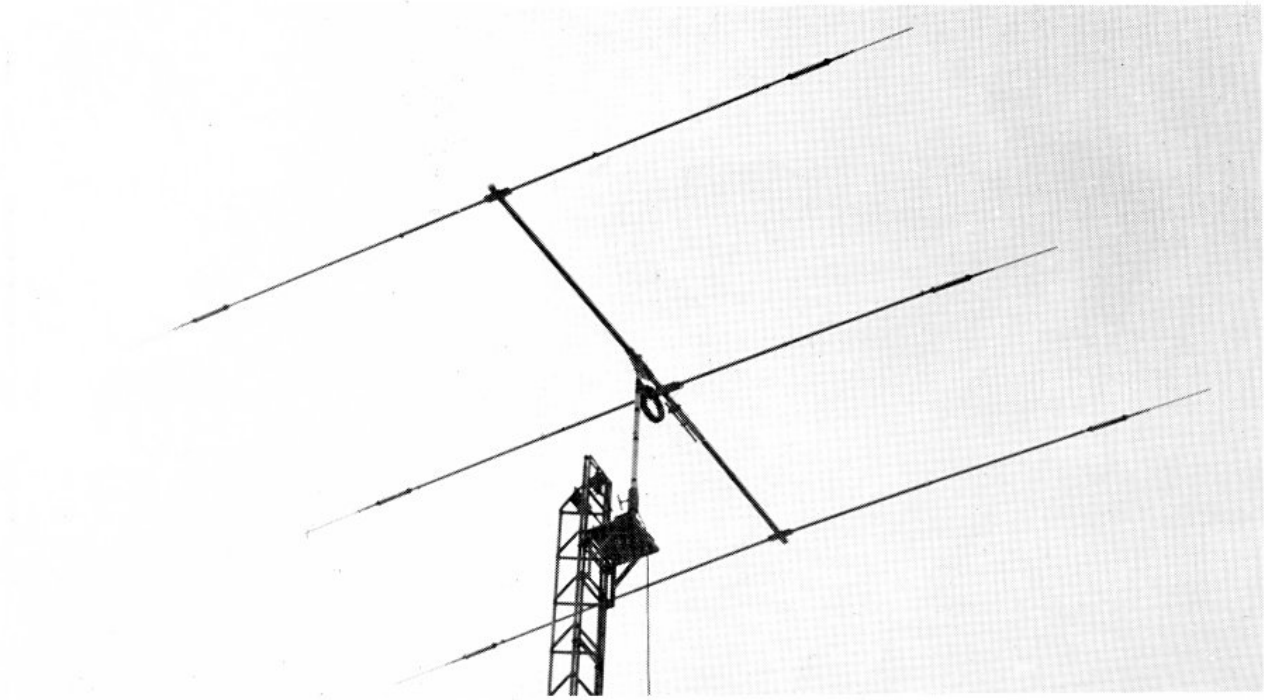
FOR 10 AND 15 METRES



The Hy-Gain Duo Band is not a new addition to our range, but it has established itself as one of the most popular duo band antennas in the world. Equipped with exclusive Hy-Gain Hy-Q traps, both bands feature F/B ratio of 15-25 dB and less than 1.5 : 1 SWR at resonance.

Boom Length	*18 feet*	*VSWR at Resonance*	*Less than 1.5 : 1*
Longest Element	*31 feet*	*Power Input*	*Maximum Legal*
Turning Radius	*18 feet*	*Input Impedance*	*50 ohms*
Surface Area	*6.4 sq. feet*	*—3 dB Beamwidth*	*66° average*
Wind Load	*164 lbs.*	*Lightning Protection*	*DC ground*
Weight	*50 lbs.*	*Forward Gain*	*8.4 dB*
		Front to Back Ratio	*15-25 dB*

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